DOCUMENT RESUME

ED 073 526 95 EA 004 834

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TITLE Entitlements for Federally Affected School Districts Under Public Laws 874 and 815. Volume I.
INSTITUTION Stanford Research Inst., Menlo Park, Calif.
SPONS AGENCY Bureau of Elementary and Secondary Education (DHEW/OE), Washington, D.C. Div. of School Assistance in Federally Affected Areas.
REPORT NO SRI-P-IU-5311
PUB DATE May 65
CONTRACT OEC-5-99-046
NOTE 352p.

EDRS PRICE MF-$0.65 HC-$13.16
DESCRIPTORS Educational Finance; Expenditures; *Federal Aid; *Federal Government; Federal Legislation; *Federal Programs; Financial Problems; School District Spending; *School Funds; School Taxes; *State Aid
IDENTIFIERS *Federal Installations

ABSTRACT

P.L. 874 and 815 have operated to help relieve the burdens imposed on public school districts. These burdens reflect the tax-exempt nature of federal property. In 54 districts examined in this regard, it was found that the payments under P.L. 874 exceeded or fell short of meeting the burden by more than 10 percent in 80 percent of the districts. The payments missed the mark by 50 percent in 30 percent of the districts. The use of minimum rates has permitted districts that have low expenditures on education and/or who receive a large share of revenue from the State to receive large bonuses under P.L. 874. Mainly for this reason, total entitlements under P.L. 874 appear to exceed those needed to just meet the burden. Local option, permitting a district to be paid at a rate per pupil equal to that of a selected set of comparable districts, does not appear to have resulted in a close relationship between the burden and the entitlements. Local fiscal ability and effort were found definitely to be adversely affected by federal connection. Some States are entitled to offset part of the federal entitlements received by districts. Only a small number of districts are presently receiving support for school construction under P.L. 815. A related document is EA 004 833. (Author)

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May 1965

Volume I

ENTITLEMENTS FOR FEDERALLY AFFECTED SCHOOL DISTRICTS UNDER PUBLIC LAWS 874 AND 815

Prepared for:

U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION
WASHINGTON, D.C.

CONTRACT OE-5-99-046

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SRI Project IU-5311

Approved: WILLIAM J. PLATT, DIRECTOR
ECONOMIC DEVELOPMENT RESEARCH

EA 001 834

PREFACE

Since 1950, the federal government has been providing funds under Public Laws 874 and 815 to school districts in areas affected by federal activity. These laws are unique, in that they are "devised to moderate special burdens which other activities of the national government create for particular local governments."* Many persons have expressed uncertainty as to the nature of these burdens and the effectiveness of the laws in meeting them. I. M. Labovitz in his study of the laws in 1963 concluded that we are uninformed as to how these laws have operated in the 4,000 school districts that receive P.L. 874 and 815 payments.

In 1961 Congress considered, but did not enact, legislation to authorize a study of the laws. In 1964, the 88th Congress passed legislation requiring the Commissioner of Education to undertake a comprehensive study of the laws. Prior to this undertaking, Professor Bruce F. Davie of Georgetown University prepared a paper at the request of the Commissioner that provided "a guide for empirical research concerning . . . the obligations of the federal government to the state and local governments in which Federal activities are located."†

In November 1964, Stanford Research Institute was selected to make the comprehensive study. In contracting for the study, however, the scope suggested by Professor Davie was narrowed to include only the obligations to the local educational agencies (school districts), the recipients of payment under these laws.

This study has presented a unique opportunity to evaluate the performance of a piece of federal legislation. Relative to most federal legislation, P.L. 874 and 815 have well-defined purposes, are simple in operation, and involve payments that can be measured directly against the stated intent of the legislation. The emphasis in the study has been to express the intent of the legislation in a quantifiable form to permit such measurement, and to identify the ways in which, and reasons for, departure from the intent of the laws as they have operated in federally affected areas. This report, in two volumes, contains the results of the study.

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* I. M. Labovitz, Aid for Federally Affected Public Schools, Syracuse University Press, 1963, p. 186.

† B. F. Davie, The Impact of Federal Activities on State and Local Governments, Georgetown University, Washington, D.C., August 1964 (Mimeo) p. 1.

The successful conduct of this study would not have been possible without the cooperation of many persons outside the Institute staff. Of greatest importance was the assistance from the Office of Education, provided by Mr. John F. Hughes, Executive Officer; Russell A. Wood, Assistant to the Executive Officer; Mr. B. Alden Lillywhite, Director, SAFA; Mr. Bert Weiner, Assistant Director, SAFA; and other members of the SAFA staff. Dr. Eugene McLoone helped us in using the 1960 Survey of School Finance.

Dr. Jerry Miner, Professor of Economics, Syracuse University, provided us with socioeconomic data for our statistical analyses. Dr. H. Thomas James, Professor of Education, Stanford University, made available data from his study of school districts in ten states; he also served as a consultant to the project, providing important counsel and advice. Others serving as consultants to the project team were Dr. J. Allan Thomas, Assistant Professor of Economics, University of Chicago; Dr. Bruce Davie, Assistant Professor of Economics, Georgetown University; Dr. Mordecai Kurz, Professor of Economics, Hebrew University, Jerusalem; and Dr. William Madow, Stanford Research Institute. Mr. James Kelly, Mr. Warren Carson, and Mr. Joseph Cronin, all of the School of Education, Stanford University, served as consultants and research associates in the conduct of the case studies.

Many persons in the individual school districts and in the state departments of education were particularly helpful in providing information to the project team. Only some can be mentioned by name: Mr. Woodrow J. Darden, Superintendent of Public Instruction, Brevard County School District, and others of his staff; Mr. Homer O. Elseroad, Superintendent of Schools, Montgomery County, and Mr. Brian M. Benson, and Mr. J. Gordon McDonald of his staff; Mr. D. E. Lindberg, Salina Board of Education; Mr. G. W. Reida, Kansas State Department of Public Instruction; Mr. Alvin E. Jones, Kansas State Property Valuation Department; Dr. C. Taylor Whittier, Superintendent of Schools, City of Philadelphia, and James K. Helms of his staff; Mr. Russell Roddy, Department of Public Instruction, State of Pennsylvania; Mr. Paul E. Crabb, Superintendent of Schools, Vallejo Unified School District, California; and Mr. Everett I. Rolff, and Mr. Francis L. Morris, of his staff.

For the Institute, Dr. Robert G. Spiegelman served as project leader and principal author of Volume I; Thomas R. Cockerline was assistant project leader, and responsible for data processing; and William J. Platt was project manager. Other contributing authors to Volume I were: Dr. Henri Beenhakker (P.L. 815); Dr. Keith Duke (Eligibility Requirements); and

Ernest J. Harvey (Trends in California). Authors of the case studies in Volume II were: Dr. William Breswick, David Curry, Dr. Robert Davenport, Dr. Keith Duke, and John Gregory (see Volume II for specific references). Very able assistance in data processing and computer programming were provided by Mr. Martin Gorfinkel and Mrs. Georgia Sutherland. Appendix G in Volume I is an independent contribution to the study, written by Dr. John T. Dailey, Director of Research, School of Education, George Washington University.

ABSTRACT

P.L. 874 and 815 have operated to help relieve the burdens imposed upon public school districts. These burdens reflect the tax-exempt nature of federal property. In general, these burdens are real and permanent manifestations of federal impact.

A rationale exists for payments to be based on the per pupil local share of current expenses not met by normally available local and state funds. However, the laws have not operated in such a way as to just meet this burden in most entitled districts. In 54 districts examined in this regard, it was found that the payments under P.L. 874 exceeded or fell short of meeting the burden by more than 10% in 80% of the districts. The payments missed the mark by 50% in 30% of the districts.

The use of minimum rates has permitted districts that have low expenditures on education and/or who receive a large share of revenues from the state government to receive large bonuses under P.L. 874. Mainly for this reason, total entitlements under P.L. 874 appear to exceed somewhat those needed to just meet the burden. Local option, permitting a district to be paid at a rate per pupil equal to that of a selected set of comparable districts, does not appear to have resulted in a close relationship between the burden and the entitlements. Thus, some changes and standardization in the method of determining the local contribution rates for payment under P.L. 874 is required to achieve closer match of entitlement and burden.

The ratio of payment for section 3(b) pupils (those whose parent works on federal property) to the payment for section 3(a) pupils (those who live and whose parent works on federal property, is currently 50%. Although an average ratio of 50% is reasonable, it does not fit the wide diversity found in the ratio among districts. Considerable improvement in determining the value of this ratio in individual districts can be achieved.

Local fiscal ability and effort were found definitely to be adversely affected by federal connection. In many states, the state government has programs to help equalize tax paying ability. In these states, it is justified for the state government to take P.L. 874 entitlements into account in determining the amount of state aid to give any district, and to offset thereby, part of the federal entitlements received by districts.

Only a small number of districts are presently receiving support for school construction under P.L. 815. The stringent requirement that growth in federally connected ADA exceed 5% results in only a small portion of eligible districts qualifying for more than a single year. Areas growing slowly or erratically under federal impact are apt not to receive payment for many of their federally connected pupils. The procedure of having a single payment rate based on the minimum construction costs per pupil of all school buildings in a state fails to capture the differences in costs between areas within a state and between types of construction (e.g., elementary vs high school buildings).

SYMBOLS USED IN THE STUDY OF P.L. 874

F = total net entitlement, P.L. 874

F_e = net entitlement for intradistrict equalization

L = local revenues (including intermediate source)

S = state payments to district

N = average daily attendance = ADA

C = current expenses of education

E = foundation program for state aid in dollars per ADA (E^v represents variable unit program)

B = basic aid in dollars, equal to a fixed number of dollars per ADA times ADA

t_s = tax rate stipulated by the state for participating in state equalization aid

t_d
= district tax rate
t_i

k = proportioning factor used to allocate state aid funds

V = total taxable assessed value

v = average assessed value per family

R = ratio of residential to residential plus commercial property values

Subscripts

f federally connected

3(a) = pupils under Section 3(a) of P.L. 874

3(b) = pupils under Section 3(b) of P.L. 874

n = nonfederal

d,i = district

r = residential

This list is duplicated at the end of this volume on a page that may be folded out and used for easy reference.

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Chapter 1

INTRODUCTION

The Burden of Federal Activity and the Provisions of P.L. 874 and 815

The federal government is the nation's largest property owner and employer, yet the effects of the presence of a federal installation upon a community differ from those of other installations. The report of the Committee on Education and Labor to the House of Representatives accompanying H.R. 7940, which became P.L. 874 in 1950, states "the United States has become an industrialist, a landlord, or a businessman in many communities of the nation without accepting the responsibility of the normal citizen in a community, because property under federal ownership or control is generally not subject to local taxation."* P.L. 874 and 815 were designed to correct this condition with regard to the financial burdens imposed upon local school districts.† The kinds of burdens that supposedly have been imposed because of the nontaxpaying nature of federal property were stated in Section 1 of P.L. 874 as follows:

1. The revenues available to such agencies from local sources have been reduced as the result of the acquisition of real property by the United States; or

2. Such agencies provide education for children residing on federal property; or

3. Such agencies provide education for children whose parents are employed on federal property; or

4. There has been a sudden and substantial increase in school attendance as the result of federal activities.

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* Report to the House of Representatives, Report No. 2287, p. 1.

† There are other local government agencies similarly burdened as pointed out by Prof. Davie, but these are neither included in P.L. 874 or 815 nor discussed in this report. See B. F. Davie, The Impact of Federal Activities on State and Local Governments, Georgetown University, Washington, D.C., August 1964 (mimeo).

Essentially P.L. 874 was designed to provide financial assistance to local educational agencies for current expenses of education; P.L. 815 was to provide assistance to construct school facilities in districts where increasing enrollment attributable to federal activities created a need for such new facilities. P.L. 815 entitlement was related, therefore, only to increased enrollment of federally connected children, and would terminate when such increases ceased, even though the federal activity continued at some constant level. P.L. 874 funds, on the other hand, tend to be more permanent, providing continual support as long as the federal activity remains in the area.

Today, P.L. 874 provides an average of 5% of current expenses to about 10% of the school districts in the United States; these districts contain about 30% of the public school enrollment in the nation. Funds dispersed under this law have increased from $45 million in 1951-52, the second year of operation, to $283 million in the fiscal year ending June 1964.

There are four sections of the law under which money is dispersed, Sections 2, 3, 4, and 6. About 5% of the money is dispersed under Section 6, which provides money to school districts providing educational services on federal property. No questions have been raised regarding these dispersements, and no more will be said in this report about this section of the law. Section 2 provides for a payment to a school district that has suffered a reduction in real property values, because of the acquisition of property by the federal government and the removal thereby of this property from the tax roles. Section 4 provides for payments that are supplemental to those provided in Section 3, specifically to ease the burdens of rapid growth. Increases in federally connected enrollment of 5% are needed to qualify for payment under this section. Together, only 1% of the payments are made under Sections 2 and 4.

Approximately 94% of the money dispersed under P.L. 874 is provided under Section 3 of the law. Under this section, funds are provided to local educational agencies (school districts) to pay for the education of public school pupils who reside, or whose parents work, on tax-exempt federal property. Federal property as defined in P.L. 874 is "real property owned or leased by the United States . . . not subject to taxation by any state or any political subdivision of a state." The definition includes real property owned by the United States and leased therefrom, except that any taxes collected on improvements owned by the lessee are deducted from the gross entitlement under this section. Excluded from entitlement under this section are pupils whose parent works on federal property that is essentially connected with a local service (e.g., post offices, courts).

The way in which this section operates and the rationale establishing the federal government's obligation under this section are discussed in detail in the report.

The provisions of P.L. 874 and 815, the background for their enactment, and the history of amendments since first passage in 1950 are contained in detail in a study by Labovitz.* The material contained in this excellent descriptive study will not be repeated in this report.

The Need for This Study of the Laws

P.L. 874 is rather unusual federal legislation, in that it does not represent purchase of services for public purposes, or aid to local or state governments to carry out legislative purposes. Rather, it represents an attempt on the part of the federal government to accept "the responsibility of the normal citizen in a community."† In fact, of course, the federal government is anything but a normal citizen in the community, and any legislation designed to achieve this end is unlikely to be fully successful. It is impossible to define fully the obligations arising from the presence of a federal installation in terms only of that activity and its direct relations with the community. The federal government directly provides over 10% of the nation's income, and then redistributes that income by the application of the federal income tax.

P.L. 874 and 815 recognize that local school districts generally operate by use of a single source of local revenue, the property tax, which is only partly responsive to the income effects generated by federal activity. If the federal government sends pupils to the local public school, and these pupils bring no property tax base, or lesser amounts of property tax base, then this school district is burdened in relation to a school district that receives only pupils that have an adequate property tax base. The implication of these laws is that, irrespective of the income effects on a community of the operations of the federal government, it is unfair to impose a special burden on local school districts. But the law is ambiguous in setting forth the nature of the burden and the manner in which the funds are to be disbursed to relieve the burden.

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* I. M. Labovitz, Aid for Federally Affected Public Schools, Syracuse University Press, 1963.

† House of Representatives, loc. cit.

The intent of the law, as stated by the Committee introducing it, is to "provide financial assistance for local educational agencies in areas affected by federal activities."* However, the implication of this statement is that aid should be based on local "need." In fact, payment is based, not on need, but on the local level of expenditures (as measured by expenditures in comparable districts--see Chapter 4 for full discussion). The rationale for the law is that the federal government fails to meet the "responsibility of the normal citizen," because of the tax-exempt status of its property. Thus, it is not aid which is provided, but payments in lieu of taxes at rates governed not by the value of the federal property, but by the amounts collected and spent in the district from other local sources: property taxes, other taxes, and nontax revenues.

The confusion existing in the law with regard to the obligation of the federal government is reflected in the unwillingness of Congress to make all of the law permanent, and in the continual stream of amendments put forth to change the law. There is considerable confusion in the law as to the criteria for establishing the level of payment, to the determination of who should be eligible, and to the extent to which the payment should be for a transition period, or continuous.†

It is the intent of this research to unravel the confusions, to show how the law has operated, and to point toward possible legislative approaches to improve the consistency of the law.

The Scope and Level of Effort of This Study

Stanford Research Institute has been authorized to conduct research designed to provide a basis upon which the U.S. Office of Education can determine the efficacy of the present laws and the need if any for suggesting to Congress legislation to improve the operation of the law. In view of the short amount of time available for this study (six months), efforts were concentrated on those aspects of the two laws which are most controversial and most important. Importance has been measured in the terms of the dollar volumes involved. Thus Section 4 of P.L. 874 has been treated only briefly, despite possible improvements, because its total dollar volume of $1.5 million is not substantial; P.L. 815 has received only one-tenth the attention of P.L. 874 because its operation has aroused much less controversy, and appears to be in much less need of revision. Most of the attention in this report therefore focuses on Section 3 of P.L. 874, since it represents most of the funds (94%) dispersed under this law, and is the focus for most of the controversy.

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* Ibid.

† See President Kennedy's statement cited in Labovitz, op. cit., pp. 87, 88.

The research effort also concentrates on the basic provisions of the law, rather than on procedural matters. There have been several proposals to improve the administration of the law; e.g., changing from one- to two-year eligibility. Many of the proposals are sound; but they have not been analyzed in this study, since a different level of effort would have been required to analyze the way in which the law is administered, as against the basic provisions of the law. The following analyses have been conducted in the study of P.L. 874 and 815:

1. For the year 1959-60, a nationwide sample of approximately 5,000 districts, including 1,000 entitled districts, has been analyzed to determine how entitled districts differ from nonentitled districts in terms of 21 school finance and socioeconomic characteristics. This analysis was conducted for the nation and for each of eight Office of Education regions.

2. The sample was also used to determine how entitled districts differ among themselves in terms of the payment options used (in those 31 states permitting comparable district option) and how those districts with a high proportion of entitlement based on properties outside the district differ from districts with a low proportion.

3. The sample was also used to conduct multiple regression analyses in 16 states for which data were adequate, to determine the effect of the degree of entitlement on local expenses for education.

4. A nationwide sample of 54 large countywide and city school districts was used to evaluate the degree to which the entitlements under P.L. 874 met the "burden" imposed by federal connection. The results were then analyzed to determine what factors are associated with over and under payment.

5. Approximately 80 school districts in California with relatively high entitlement (above 5% for high schools and unified districts and 10% for elementary districts) were analyzed for the period 1956-64 to determine the relationship between trends in entitlement and trends in major school finance variables--current expenses of education, local revenues, assessed value, tax rates, and state aid.

6. A nationwide sample of 800 high schools contained in the Project Talent Study at Pittsburgh, were analyzed to determine if entitlement was associated with educational achievement or educational standards of performance.

7. A sample of 150 districts eligible for P.L. 815 funds were analyzed to determine the use and distribution characteristics of P.L. 815 money.

8. Five individual districts were analyzed in depth as case studies.

9. Certain characteristics of entitlement have been statistically described for the entire population of 4,000 entitled districts, mostly for the year 1959-60.

   The extensive use of the year 1959-60 for analysis was necessitated by the availability of survey and census data for that year only. Use of that year creates no analytic problems, however, because of the stability over time of area characteristics, and distribution of entitlements.

The report is in two volumes; Volume I contains the general analysis and conclusions; Volume II, the results of five district case studies: Montgomery County, Maryland; Salina, Kansas; Philadelphia, Pennsylvania; Brevard County, Florida; and Vallejo, California.

Chapter 2

SUMMARY AND CONCLUSIONS

The Obligation of the Federal Government to Affected School Districts

P.L. 874 and 815 are the laws under which the federal government recognizes an obligation to relieve cost burdens imposed on school districts by federal activity. Primarily, these burdens relate to the need for school districts to provide education to children who reside with parents who live or work on tax-exempt federal property. The burden may be specifically defined as "the costs of education incurred for federally connected pupils not met by normally available local and state revenues." By normally available revenues is meant those that would be available for the typical nonfederally connected pupil in the community, or of communities of similar socioeconomic structure.

The nature of the obligation has been confused by the emphasis placed on tax exemption of federal property as the cause of the burden. P.L. 874 is often regarded as providing payment in lieu of taxes; yet it clearly does not, since the payments are made at rates determined by the costs of education in the communities and not by the worth of the federal properties. In addition, entitlements go to the school districts educating the federally connected pupils and not necessarily to the districts containing the federal properties.

Our conclusion is that eligibility under these laws must rest upon the burden principle and not upon the in-lieu-of-tax principle. In the first place, it is administratively almost impossible to implement a consistent in-lieu-of-tax program, because of the unmanageable task of determining the true market values of most federal properties (e.g., what is the value of an air base in Kansas?). Second, large inequities would arise in the distribution of funds, as a few fortunate districts that encompass key properties would receive huge payments, while neighboring districts educating many of the federally connected pupils would receive none; (e.g., 104 school districts educate pupils and receive P.L. 874 entitlement based upon the Tinker Air Force Base, located in one district, Midwest City, Oklahoma). Third, the case studies indicate that total payments in lieu of taxes would not necessarily be lower than they are under the burden principle.

Another question that arises with regard to the federal obligation is whether the burden imposed is of a permanent or transitory nature. A transitory burden would exist if the local tax base recovers to pre-impact levels after receiving the initial shock of the arrival of the federal activity. Three kinds of test initiated in this study indicate that the burden is a permanent one, and that the "impact" is lasting. First, calculations in a special study of 54 districts indicate that in all cases assessed value per pupil is lower for federal pupils than for nonfederal pupils in the same district. Second, multiple regression analysis in 16 states indicates that larger proportions of federal ADA are associated with lower levels of local spending on education, after taking into account differences in socioeconomic structure of the community.* Third, in heavily impacted districts in California assessed values per pupil generally failed to improve in the years following federal impact, unless some other nonconnected event occurred in the community (e.g., a reassessment, new industrial plant, etc.). Fourth, our theoretical analysis suggests that there is no a priori reason to expect that the economic impact of federal activity will improve the financial ability of the school district to provide education on a per pupil basis; this stems from the fact that the economic growth accompanying federal impact may be modest, and is at any rate accompanied by both increasing property values and increasing school population; there is no reason to expect that the former will increase more rapidly than the latter.

It may be noted that once the burden principle is accepted, there is no reason to exclude Section 3(b) pupils from eligibility; these are pupils who live with parents who either live or work on federal property, but not both. They are almost entirely the latter, i.e., pupils whose parents work on federal property. Their eligibility rests upon the fact that school districts are generally unable to maintain, with reasonable effort, levels of expenditure derived only from residential property taxes. The burden is created by the absence of taxes on places of work. The burden in each district depends upon the balance of residential and business property in the district, and may be negligible for a predominantly bedroom community. Nevertheless, there is no justification in principle for excluding the 3(b) pupil from payment.

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* Multiple regression analysis is cross-sectional at a point in time, and does not directly prove that the effects on local spending are permanent. Nevertheless, it is highly unlikely that the impact would have been statistically significant if it were only transitory, because at any one point in time new federal activities are a very small portion of the total of federal activity, and could not significantly alter local spending patterns in the nation.

Thus, we conclude that P.L. 874 is a defensible, though somewhat unusual, piece of federal legislation; that it is properly conceived in terms of relieving burdens imposed upon school districts that educate federal pupils; and that permanent payments to impacted areas under P.L. 874 can be justified. The burden as defined by P.L. 874 relates entirely to the needs of each district as expressed by its own level of effort. Thus, the burden tends to be greater in rich than in poor districts. This concept of burden does not take into account educational "needs," which may be measured in terms of some educational standards or goals. This task has been delegated to Title II, P.L. 89-10, Financial Assistance to Local Educational Agencies for the Education of Children of Low Income Families.

Overall Evaluation of the Appropriateness of the Level of Entitlements Under Section 3, P.L. 874

The local burden may be said to be met when the federal payment under P.L. 874 provides revenue per federally connected pupil, which, when combined with local revenue derived from the federally connected family, equals the local revenue available for each nonfederally connected pupil. P.L. 874 meets the local burden in terms of the conditions and aspirations of each school district. The major test in this research was to determine if payments are actually meeting this burden, and if not, why not.

It does not follow that meeting the burden in terms of local conditions is the only possible goal of the federal payment under P.L. 874. It is, however, the expressed intent of the law to do so, and thus the operation of the law must be tested against this intent.

To study the appropriateness of the level of entitlements we analyzed 54 large countywide or city school districts in 18 states. The analysis consisted in calculating the payment required to just meet the burden, which is then compared with the entitlement actually received.

We found that the average federal entitlement conforms closely to the overall burden. However, the distribution of the comparisons demonstrates that the law operates well in only a few districts. In 42 of the 54 districts, the actual entitlements differ from the entitlements required to relieve the internal burden by 10% or more. In 13 districts, payment required to meet the burden is at least 50% less than actual entitlement. On the other hand, in 3 districts the payment needed for intra-district equalization is 50% greater than the actual payment. The key message is the wide dispersion of results, indicating that the procedures do not typically operate to just meet the burden for individual districts.

The case studies generally confirm this finding. Less precise measures obtained on a statewide basis for 44 states indicate that entitlements needed to just meet local burdens are about 25% lower than are actual entitlements.

We can conclude that the method of payment results in wide discrepancies among districts, with many districts receiving large windfalls, and a smaller number receiving payments less than necessary to meet the local burden.

The Aspects of the Operation of the Law that Influence the Appropriateness of the Entitlement

The method for determining entitlement under Section 3, P.L. 874 is basically simple. Net entitlement is equal to the local contribution rate (LCR) for determining payment, times the sum of the number of pupils under Section 3(a), and one-half the number of pupils under Section 3(b), less deductible funds; this formula may be expressed by the following equation:

$$F = LCR\ (N_{3(a)} + 1/2\ N_{3(b)}) - D$$

where

F = net entitlement under Section 3, P.L. 874

$N_{3(a)}$ = number of pupils entitled under Section 3(a); i.e., pupils of parents who both live and work on tax-exempt federal property

$N_{3(b)}$ = number of pupils entitled under Section 3(b); i.e., pupils whose parent either lives or works on federal property

D = deductions from gross entitlement, generally for federal in-lieu-of-tax payments*

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* The question of deductions is complex in detail and not too significant in terms either of the amount of money involved or the principles of the law. They will not need to be discussed in this report.

In essence, the amount of entitlement for an eligible district is determined by establishing an LCR and counting the number of pupils entitled under each subsection of the law. Problems of counting pupils are administrative and will not be discussed further.

It is assumed to be the intent of Congress that the amount of entitlement matches the local burden. For the entitlement to match the local burden, the following is necessary: (1) the LCR must equal the local share of current expenses that would exist if federal families made the same contribution per pupil to local revenues as do nonfederal families; and (2) the ratio of the payment rate for 3(b) pupils to the payment rate for 3(a) pupils must reflect the contribution to local revenues by federally connected families living in the community. We will first report on our findings with regard to the LCR.

The Methods for Determining the LCR

The LCR is based upon local current expenditures of comparable districts and the district's ADA in the second preceding fiscal year. In part, the LCR may differ from that needed to meet the burden because of the two-year time lag. Costs of education per pupil have been increasing at an average rate of about 5% per annum, introducing a time lag that should result in LCR being about 10% below the local costs incurred in a district. But in fact, the average LCR is much above local costs.

The LCR may also differ from that needed to meet the burden because the LCR is not comparable to the local share of current expenditures per pupil in the entitled district that would exist if federal families were like nonfederal families. As currently amended, P.L. 874 provides that the LCR may be established in one of three ways: (1) by an entitled district selecting a group of comparable districts within its state, and receiving payment at a rate equal to the average LCR of the group; (2) by electing to be paid at a minimum rate equal to one-half the state or national current expense of education; or (3) by being in a state that elects to establish groups of generally comparable districts, and receiving payment at a rate equal to the average of the group to which the district is assigned. In 1959-60, 25% of districts used the first method of receiving payment; 27% of districts used the second method; and 48% used the third method, i.e., they were assigned to groups established by the state. So-called group rates are established in 19 states; 31 states permit local option.

It was found in the analysis that all the methods result in average payment rates biased toward overpayment, with the median district in a random sample of 1,000 entitled districts having an LCR $40 more than its local share of expenses or about 20% of the average LCR of $210 paid in 1959-60. Somewhat less upward bias would be shown if the local share could be fully corrected for contribution of federally connected families.

The method of payment that contributes most to the overpayment is the use of minimum rates, especially payment at one-half the national expense. In states permitting local option, the median district electing to receive payments at one-half the national expense had in 1959-60 an LCR $120 above its actual local share of current expenses. Almost all the districts taking this option in a sample comprising 267 such districts, had LCR's that exceeded the costs by between $20 and $150 per ADA.

An analysis of the characteristics of districts that elect to receive payment at minimum rates shows that such districts differ from districts that elect to receive payment on the basis of comparable district LCR's in four principal ways: (1) they spend less on education--in 1959-60, such districts spent an average of $90 per ADA less; (2) they raise a much smaller share of their total expenses from local sources--in 1959-60 they raised only 37% of revenues from local sources, whereas those using comparable district raised 69% of revenues from local sources; (3) they have lower family incomes--in 1959-60, median income in such districts was only two-thirds of the family income in those using comparable districts; and (4) they tend to concentrate geographically in the southeastern part of the country.

The minimum rate option has its most arbitrary effect in the 19 states that have established comparable groupings at the state level. In 10 of these states, one or more of the groups received payment at the minimum rate, because the average LCR for the group was below the minimum rate. Many groups are so constituted that it is reasonable for the districts in the group to have lower than average costs--for example, a group comprising all elementary schools; yet these groups are able to substitute minimum rates and receive bonuses that do not reflect lower ability to pay for education.

In conclusion, we find that the minimum rate option tends to provide considerable bonus to districts that, for whatever reason, have low expenditures on education and receive large portions of their money from the state government. Although there is some income equalization in the use of minimum rates, the minimum rate is a poor tool for equalization when compared with the explicit equalization arrangements employed in many states and recently legislated in Title II, P.L. 89-10.

The first method of payment, i.e., selecting comparable districts, is expected to result in an LCR that approximates the actual local share of current expenses that would exist in an affected district without federal activity. Nonetheless, our study shows that districts using this procedure generally have LCR's that differ widely from the true district costs. Of a sample of 294 districts electing to receive payment based on comparable districts, 212 had LCR's that differed by more than $20 from local share of expenses, and 113 districts had LCR's that differed by more than $50.

LCR's tend to exceed actual local costs because districts try to select comparable districts that have higher local expenses of education. Nevertheless, in many states, an effort is made to select comparable districts that have an aggregate LCR roughly equal to that of the entitled district. Since, however, almost all other characteristics of districts are ignored in the selection, the result is similar to using the entitled district's LCR directly. In other states, the selection of comparable districts provides bonuses, and no basis for the selection of comparable districts is apparent. The problem arises because there is no standard definition of a comparable district or a standard procedure for selecting comparable districts. It is our conclusion that it is almost hopeless to administer the comparable district option in such a way as to assure that there is uniformity in practice and equity to all districts.

Groups of "generally comparable" districts have been established in 19 states. Each district is paid according to the average LCR of the districts in its group. Wide differences in the school district organization among states make it impracticable to establish a rigid rule regarding the number and types of groups for all states. Intrastate differences suggest that use of only a single group within one state is probably not justified (five states use only one group for all districts). Nor is it likely that use of as many as 13 groups, based on size difference alone is justified, as in Texas. Grouping by grade level and major size categories is probably justified. Before establishing definite criteria for grouping, however, more investigation is needed as to the groupings that represent a legitimate basis for cost differentials.

The Payment Ratio for Section 3(b) Pupils

The payment ratio for Section 3(b) pupils, currently set at 50%, has been severely criticized, and generally considered as over generous; it is also believed to be the main basis for overpayment. We find that neither of these premises is correct. On the second point, we find that relative overpayment in terms of the local burden is associated much more with the relative generosity of the LCR than with the 3(b) payment ratio. On the crucial first point, we find that for the nation as a whole, the ratio of residential to commercial property values is about 55/45, indicating an average payment ratio for 3(b)2 pupils of .45, instead of the present .50. However, this assumes that federal families contribute the same as do nonfederal families to residential property values. Our findings in Salina, Kansas, indicate that federal families may contribute considerably less than this amount in many circumstances. We conclude, therefore, that there is evidence that the 50% payment ratio for 3(b)2 pupils is reasonable, if a single payment ratio is to continue to be used for all districts.

As mentioned by Labovitz, the national average is not very meaningful for a law that is intended to meet the conditions existing in individual school districts.* The evidence from the school districts examined in this study leads to the conclusion that the proper payment ratio varies tremendously from district to district, depending upon the character and organization of the district. For example, Montgomery County is a bedroom community 70-75% residential and appears to justify a 3(b) payment ratio of about .35,† whereas San Francisco, a large commercial city is only 42% residential, justifying a payment ratio of .60. States without a personal property tax on household effects have higher proportions of taxes on business, and therefore deserve higher payment ratios. Using the ratio of residential to business property in each district will significantly improve the 3(b) payment ratio. However, further adjustment for the relative contribution of the federally connected families to local revenues is necessary to achieve exact comparability at the district level. In Salina, Kansas, the contribution from residential property tax per federal pupil is 40% less than that per nonfederal pupil, because value per residence is lower and pupils per household greater. On the other hand, in Montgomery County, the federal contribution is 4% higher.

It may be concluded that the only procedure for guaranteeing a 3(b) payment ratio that fully reflects the contribution of federally connected families to local school revenues is to require that each applying district conduct a standardized survey that will establish the appropriate local ratio. A suggested survey technique is provided in Appendix A to this report. Owing to the stability of the ratio, the survey would need to be conducted only once every few years.

A question is raised with regard to the justification of payment for pupils whose entitlement is based on property outside the district of residence. In terms of the burden principle, there is no _a priori_ basis for excluding these pupils from entitlement. The problem of commuting outside the district does create burdens for many school districts, and commuting to federal property is among them. Districts with a high proportion of entitlement based on out-commuting do not spend more on education than do districts with the facilities inside. The heavily "out" districts consistently spend more local and less state funds; but less total funds in several regions of the country. Any overpayment to districts with heavy out-commuting would be eliminated by using the district's own 3(b) payment ratio. In this situation a bedroom community for which out-commuting is typical will have a low payment ratio, whereas a community for which out-commuting is not typical, will have a higher payment ratio.

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* Labovitz, _op. cit._, p. 160.

† See Chapter 4 for discussion of wh[illegible] payment ratio differs from the ratio of commercial to residentia[illegible]operty.

In conclusion, we find that the methods of determining the LCR and the 3(b) payment ratio currently used lead to wide discrepancies between the entitlements and the local net burden created by federal activities. We find further, that the methods tend to provide bonuses for districts with low expenditures per pupil on education and to penalize districts with high expenditures. Even though there is some tendency for relative bonuses to be associated also with low family incomes, the correlation between the amount of over- or underpayment and the family income level is not high, indicating that as a device for income equalization, the payment procedures under P.L. 874 are unsatisfactory.

An alternative formulation is developed in this study that would eliminate the distinction between 3(a) and 3(b) pupils and provide a calculation of the proper payment to relieve the federal burden. This payment for any district is the amount which, when added to local revenues available from federally connected families results in the same total revenues per pupil for both federally connected and nonfederally connected pupils (see Chapter 3). To determine the payment, it is necessary to calculate the tax revenues derived from all federally connected families, including those without any pupils in public schools (now missed in the present formulation), and those of members of the Armed Forces living in private residences (now counted as 3(a)'s). A procedure for approximating the federal payment using the formulation developed in Chapter 3 is presented for a sample of 54 districts in Appendix D and discussed in Chapter 4. A more precise procedure involving household surveys is presented for the case study of Salina, Kansas (see Volume II).

Federal Entitlement and Local Effort

Several methods were employed in this study to investigate how federal activities affected the fiscal effort made by school districts in providing public education. Multiple correlation analysis was employed in 16 states for which data were adequate. This analysis showed that in

11 of these states federal activity was associated with reduced levels of local fiscal effort. (There was no statistically significant relationship between degree of federal impact and local effort in the remaining 5 states.) According to the results of this analysis, a district with federally connected ADA would spend, out of local revenues, less per pupil than another district in the state with similar socioeconomic characteristics.

An analysis of heavily impacted districts in California for the period 1957-64 showed that a relative increase in the ratio of federal to nonfederal pupils in the public schools is associated with a decline in the assessed value per pupil and a parallel decline in local effort. Unless the impact is very sharp, however, there may be almost no change in total expenditures per pupil, since federal funds under P.L. 874 and state aid take up the slack. This is exactly the purpose for which P.L. 874 was designed, and in California it appears to meet this purpose. In general, throughout the state, expenditures on education per pupil tend toward the state average. Thus, if expenditures are above that average, federal impact may be associated with a decline; whereas if expenditures are below the average, this tendency may not occur. Since increasing entitlement does not generally show up as increases in expenditures on education, it is likely that where the federal government is making overpayments relative to the actual local burden, there will be substitution for normally spent local funds. In other words, overpayment does not lead to higher levels of expenditure on education. This finding in California is consistent with the finding that on a cross-sectional basis, there is a strong negative correlation between current educational expenditures per pupil and the amount by which the P.L. 874 entitlement exceeds that needed to meet the local burden.

There is no statistical evidence to support the contention that federal impact changes the levels of aspirations in the district. An evaluation of the program offerings of 800 high schools in the nation by Professor Dailey failed to disclose any connection between degree of entitlement and offerings.* The case studies, however, do indicate that where entitlement has been large and has caused a complete change in the community, as for example in Brevard County, Florida, there may be three effects: (1) the very fact that there is growth and expansion permits some improvements, such as newer schools and equipment; (2) the larger size of the student population permits a wider offering of courses, consistent with that found in school districts of similar size; and (3) if the federal impact occurs in essentially rural, or underdeveloped areas, there may be a change in program content. These effects do not appear to be sufficiently pervasive to show in statistical analyses, but they are indicated in the case studies of Brevard County, Florida, and Salina, Kansas. On the other hand, the effects may be negative, as in Vallejo, California, where the rapid turnover and industrial character of federally connected employment have provided a poor educational environment.

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* See Appendix G.

The Offsetting of P.L. 874 Funds in State Aid

A major controversy arises with regard to state governments reducing their state aid to districts receiving P.L. 874 funds. Fifteen states, including Hawaii, which has only one district, offset part of the federal funds in calculating state aid. The offsets occur only where equalization aid is involved, and where such aid is determined on the basis of relative assessed value per pupil. Under these conditions, a district whose assessed value per pupil has been reduced by an increase in federally connected pupils, will receive more state aid per pupil than will a district of the same size that has not had assessed value reduced by federal impact. This would be proper if the reduction in assessed values represents a reduced ability of the school district to provide education. However, if the federal government is meeting the burden through P.L. 874, there is no reduction in ability, and there is thus no basis for higher state aid payments per pupil. Therefore, we conclude that where the state has a foundation program, with equalization aid based on assessed values, it is justifiable for the state to take P.L. 874 funds into account in determining the amount of equalization aid to give. For 17 districts in California and Virginia examined in this study, we found that typically about 30 to 40% of the actual federal payments could be justifiably offset. These represent the double payment to the district, where both the state and federal government are compensating the school district for the same lack of tax base.

Eligibility Requirements

The basic requirements for eligibility under Section 3 of P.L. 874 are that federally connected ADA must be at least 10, or 3% of total ADA. These requirements were imposed to avoid the high cost of providing small sums of money and were based on the premise that every school district should be able to absorb small numbers of federally connected pupils without hardship. The more stringent qualifications for large school districts, that 6% of total ADA be federally connected, were based on the assumption that large districts could absorb a greater percentage of federally connected students without hardship. However, the absorption concept which underlies the eligibility requirements in P.L. 874 is applied only to nonqualifying districts. School districts that meet the eligibility requirements as specified in the law are not required to absorb any federally connected students; they receive funds for their entire federally connected ADA. This situation creates an important discontinuity between those districts that receive no federal payment, thereby absorbing federally connected ADA up to 3 or 6% of total ADA; and qualifying districts with federally connected ADA's of slightly over 3 or 6% that receive payments for all eligible pupils. By requiring all districts to absorb a certain percentage of federal students before payments are made--as large districts were required to do until FY 1958--these discontinuities could be eliminated and the program would be more equitable.

The eligibility or absorption requirement as currently stated in terms of numbers of pupils is inequitable, as it does not distinguish between 3(a) and 3(b) pupils. Since the 3(a) pupil creates the greater burden, this process means that districts predominantly 3(a) absorb a larger burden than districts predominantly 3(b). It would be preferable to delineate the absorption or eligibility requirement in terms of the burden; i.e., as a certain percent of local share of expenses, rather than as an ADA requirement. Alternatively, the 3(b) pupil may be counted as only a portion of a 3(a) pupil for eligibility as well as for payment.

This finding does not imply that the present 3% eligibility requirement is optimal. In fact, if the absorption principle is adopted and if 3(b) pupils are not counted as full pupils, then retaining the 3% requirement would substantially reduce the entitlements to a majority of districts.

Another important discontinuity is created by basing the distinction between large and small districts (therefore those that fall under the 6% rule and those that do not) on prewar attendance data. Only half the school districts with an ADA of 35,000 or more in FY 1960 fall under the 6% rule, and some of the "small" districts are currently more than twice as large as some of the "large" districts. Application of the same absorption requirement to all districts would also eliminate this discontinuity.

In FY 1960, over 4.9 million pupils (about 14% of the national enrollment) attended schools in districts falling under the 6% rule. The total ADA of all large districts qualifying for P.L. 874 entitlement under the 6% rule was 760,000. At least one district (Los Angeles) with an ADA of 533,000 could qualify for P.L. 874 entitlement if the distinction between large and small districts were removed. Additionally, an unknown number of others that have never conducted a survey of their ADA, because of the cost of doing so, might also qualify.

The greater ability of school districts falling under the 6% rule is difficult to determine, primarily because there is no single measure of financial ability that can be equitably applied to all districts. Total and assessed valuation per ADA, probably the best measure of financial ability, is consistently higher in large districts than in average districts in the same state. Many large city districts also have more sources of local revenue upon which to draw than have other districts. However, significantly greater demands are made on local tax sources by other local governmental agencies in most large districts, educational costs are substantially higher, state and other nonlocal sources of revenue are significantly lower, and practical limits on local revenues are frequently placed on large city districts by state legislatures. Increasingly, large districts must also meet local demands for more costly programs (e.g., vocational education, compensatory education, basic English, and citizenship training) and many of them have recently experienced enrollment increases while total population has declined.

Because of the many special circumstances in large school districts as defined under P.L. 874, it is impossible to justify a differential of 6% vs 3% qualification for entitlement between large and small districts.

Evaluation of Public Law 815

The principles that establish the obligation of the federal government to relieve cost burdens imposed on school districts by federal activities operate with P.L. 815 as well as with P.L. 874. The burden in P.L. 815 relates to the increased enrollment immediately associated with changing levels of federal activity and the imposition of capital costs. The burden is imposed for a similar reason as in P.L. 874; i.e., the lack of tax base; however, P.L. 815 applies only to construction costs incurred for additional federally connected pupils.

In this study, a comparison was made between P.L. 815 payments, under Section 5, received by 3 school districts and the financial burden placed on these districts as a result of their increase in federally connected enrollment in elementary and secondary schools.* This comparison disclosed that in two of the three districts there was a substantial difference between the financial burden and the P.L. 815 payments.

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* The districts were Brevard County, Florida; Montgomery County, Maryland; and Salina, Kansas.

In one of the case studies, that of Salina, Kansas, the financial burden exceeded the P.L. 815 payments mainly because (1) the property tax payments of federally connected families assumed by P.L. 815 exceeded the estimated amount of such taxes and (2) there were increases in federally connected ADM during years in which no P.L. 815 payments were received.

The first cause of difference reflects the inaccuracy of the 50% payment ratio for 5(a)2 pupils, similar to that causing underpayment of P.L. 874 funds. Proper evaluation of the contribution to local property taxes of federally connected families would alleviate this difficulty for both P.L. 815 and P.L. 874.

The second cause is unique to P.L. 815, and the problem of underpayment for this cause reflects the difficulty of complying with the 5% eligibility rule for each two-year period, over a longer period of federal activity expansion. Our findings show that very few districts receive payment under P.L. 815 for two or more consecutive years. Districts like Salina, experiencing growth over a number of years, fail to qualify in many of these years. Nevertheless, it is total change in ADM, not speed of growth, that creates the need for new facilities. A district's total need for new construction is just as great for a 5% increase over three years as it is for a 5% increase over two years (although the ability of the district to absorb the burden is greater in the latter case). The federal burden should relate to the total increase in construction needs over time.

The analysis of school districts that did not meet the Section 5 eligibility requirements indicated that the percentage of districts that failed to meet the requirements is larger for school districts with a large average daily membership (ADM) than for school districts with a small ADM. Thus, it is concluded that it is harder for large school districts to meet the eligibility requirements than for smaller school districts.

There is a wide variation in the actual per pupil cost of building minimum school facilities for different types of school buildings. The computation of SPPC's (state per pupil costs) does not distinguish between the costs of building elementary schools and the costs of building high schools or the costs of constructing new buildings and the costs of constructing additions. The variation in actual per pupil construction costs under the above method of computing SPPC's results in P.L. 815 payments for elementary schools that are too high, and P.L. 815 payments for high schools that are too low. A similar observation may be made for payments for additions and payments for new buildings.

The analysis of the nonfederal share of costs of building school facilities disclosed that (1) the nonfederal share is generally a low percent of total costs and (2) there is no tendency for the nonfederal share to change with subsequent entitlements under P.L. 815.

During the analysis of P.L. 815 it appeared that of the school districts that received or applied for P.L. 815 payments, only a few were familiar with the details of the law.

Although in principle one would expect nonabsorbed payments to indicate payment in excess of construction need, the data were insufficient to permit any conclusions to be drawn.

Statistical analysis could not be performed for Sections 8, 9, and 14 payments since there were too few payments under these sections over the years 1954-64.

Suggestions for Revisions of the Laws and Procedures*

In the light of the above conclusions, the following revisions in P.L. 874 and 815 are suggested:

1. To the extent that the federal government recognizes an obligation to school districts for burdens imposed by the federal activity, and the burden is defined as local costs incurred for federal pupils unmet by normal state and local revenues, it follows that Section 3(b) should be made a permanent part of P.L. 874.

2. It is suggested that the minimum rate options, permitting payment at one-half the state or national average current expenses of education be eliminated. These options are particularly inappropriate in the group rate structures. They have operated to provide sizable bonuses to districts with low expenses on education and high proportions of state aid, and cannot be justified in terms of the intent of the legislation. The newly enacted Title II, P.L. 89-10, providing financial assistance to educate children of low income families, is a much better vehicle for income equalization.

3. The present methods for determining LCR are not meeting the intent of the law in most districts; changes to improve this situation are feasible. Theoretically, local option for determining LCR

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* Suggestions for further research are contained in Appendix B.

should come close to meeting the intent of the law, but in practice it has not. It is suggested that one of two procedures for calculating LCR be adopted: (a) abandon local option as impracticable, and inaugurate a consistent procedure for district grouping within each state; or, (b) if retention of local option is desired, abandon only the comparable district comparisons and determine the LCR for each district on the basis of that district's local share of current expenses for nonfederal pupils.

If the LCR is to be determined by district grouping, the group categories should take into account differences in school district organization between states, and should capture those differences in school district structures that cause different levels of costs.

At present, no state has structured its groups of districts so as to reflect different levels of effort; thus, all unified rural schools may be one group. It is, however, feasible to have subgroupings that reflect levels of local expenditure per ADA; for example, unified rural schools that spend a large amount per ADA would not be grouped with similar schools spending considerably less for purposes of determining the LCR. More research is required to devise appropriate groupings that properly reflect the goals of the law.

If the LCR is to be determined for each district separately on the basis of that district's local share of current expenses for nonfederal pupils, then the procedure evolved in Chapter 3 of this study should be substituted for the present payment formula. In the suggested procedure, the local share of current expense per nonfederal pupil is multiplied by the number of federal pupils, and the contribution of all federally connected families to local tax revenues is subtracted from the product. In this procedure, no formal distinction is made between 3(a) and 3(b) pupils.

4. If a single average payment ratio for 3(b) pupils is retained, a ratio of .50 is reasonable. This ratio, however, is inappropriate for most districts. A ratio that more closely reflects the contribution of federally connected families can be obtained by using the ratio of residential to business property values in each district.* This improvement can be based upon data easily retrievable from the property records of county assessors.

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* A procedure for calculating approximately correct entitlements is demonstrated for a sample of 54 school districts by using the districts' ratios of residential to business property values to calculate the contribution of federally connected families. These calculations are shown in Appendix D and discussed in Chapter 4.

5. A further step that would more fully capture the contribution of all federal families requires household surveys to compare the value per residence and the number of public school pupils per household of federally connected and nonfederally connected families.[*] Because of the inherent stability of the ratio, such a survey can be done at intervals of a few years. The determination of the contribution of all federal families to local revenues will remove most of the objections to entitlements for 3(b) pupils and especially for 3(b) pupils whose parent commutes to work. In this way, all federally connected revenues are captured (revenues now missed are those from federally connected families without public school pupils and those from private residences of members of the armed forces).

6. It is suggested that the definition of a federally connected pupil be changed from having a parent working on federal property to having a parent who is a primary wage earner working on federal property. Payment is currently made for one group of pupils for which there is no measurable burden. These are pupils entitled on the basis of a secondary wage earner employed on federal property, where the primary wage earner is not employed on federal property. For this pupil, the district receives local support from both the residence and the place of work.

7. The differential eligibility requirement between large and small districts based on ADA for FY 1939 should be eliminated, as there is no indication that the large districts are better able to bear the federal burden than are small districts. In addition, there is little equity in the present system by which many large districts qualify under the 3% rule while others are under the 6% rule.

8. The eligibility requirement should be converted into an absorption requirement in terms of local share of expenses; i.e., federal entitlements should only be for the calculated burden in excess of some percent of a district's local share of expenses.

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[*] A procedure for calculating the federal payment that will just meet the local burden by use of property records and a household survey is demonstrated in the case study of Salina, Kansas (see Volume II). Procedures for determining the proper entitlement by use of sampling are described in Appendix A.

The present procedure is inequitable, in that it requires districts with a 2.9% federal ADA to absorb these costs, whereas districts with 3% receive full payment;* this discontinuity in absorption should be eliminated by making all districts absorb a given percent of federal burden. This report does not necessarily suggest that an absorption rate as high as 3% is most desirable. In fact, a 3% absorption would substantially reduce entitlements for a large proportion of presently entitled districts.

9. In order to remove the present bias toward underpayment of P.L. 815 funds to large districts, and districts with continuous, but slow or erratic annual increases in federal entitlement, it is suggested that further investigation be made as to the possibility of including in the establishment of eligibility requirements the increases in federally connected pupils during the year(s) prior to the year of application, (perhaps permitting such averaging to take place back to the origination of the law in 1950). In the case of an applicant with a prior payment under P.L. 815, the prior years to be included would exclude those covered by that application. Thus, the sum of the augmentation in federal students during the two-year increase period and the increases of federal students in prior years hitherto not covered by P.L. 815 would be compared with 5% of the ADM during the base year to determine eligibility.

10. Minimum costs of school facilities per pupil under P.L. 815 should at least reflect difference in costs of constructing different types of facilities--elementary, junior high, and high schools. They may also be differentiated between new building and additions. This will eliminate windfalls for construction of elementary schools and penalties for construction of high schools.

11. There are a large number of administrative problems that have not been investigated in this study, but that appear to complicate the administration of these laws. Many of these have been the subject of proposed amendments and are referred to in Appendix B. It is suggested that the Director of the SAFA Division be consulted as to possible improvements, with special attention to those that can be accomplished without materially affecting the purposes of the laws.

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* Note that for eligibility a pupil entitled under Section 3(b) is counted the same as a pupil under Section 3(a).

Chapter 3

DESCRIPTION OF ENTITLED DISTRICTS, OBLIGATION OF THE FEDERAL GOVERNMENT TO FEDERALLY AFFECTED AREAS, AND CRITERIA TO EVALUATE PAYMENTS UNDER P.L. 874

Description of Entitled Districts

The Distribution of Entitlements under P.L. 874

As noted in the introduction, entitlements under P.L. 874 have increased from $45 million in 1952, the second year of operation, to $283 million in 1964,* an annual rate of increase of 16-1/2%. The number of eligible applicants has increased more than threefold in thirteen years of operation, from less than 1,200 to 4,076 applicant districts.

For many districts and some states, entitlements provide a large portion of the funds available for public education. In 1960, about 5% of entitled districts had entitlements that represented one-fourth or more of their current expenses of education. Several districts receive very large sums of money. Juneau, Alaska, Fairfax County, Virginia, and San Diego, California, are examples of large districts each receiving entitlements of several million dollars a year, which represent a sizable portion of their current expenses of education. However, most heavily entitled districts tend to be small, and most of the entitlements go to districts not heavily dependent upon entitlements as a source of funds.

The distribution of P.L. 874 entitlements by state and Office of Education Regions is shown in Table 1. This table shows that for 18 states, entitlements represent more than 3% of the current expenses of education. For six states--Alaska, Hawaii, New Mexico, Nevada, South Dakota, and Virginia--entitlements are more than 5% of current expenses. In the continental United States the Southeast, Southwest, Mountain and Pacific Regions are the most dependent upon entitlements, as represented by their share of current expenses, while the North Atlantic and Great Lakes Regions are least dependent.

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* Preliminary estimate by the Office of Education.

Table 1

NET ENTITLEMENT AND CURRENT EXPENSES OF EDUCATION BY REGION AND STATE

FY 1964

(Thousands of Dollars)

Region and State	Net Entitlement P.L. 874	Total Current Expenses
Total U.S.	$283,775	$16,896,948
Region 1 - New England		
Connecticut	$ 2,472	$ 275,000
Maine	2,597	75,600
Massachusetts	8,266	434,000
New Hampshire	1,643	48,027
Rhode Island	2,456	68,000
Vermont	61	30,170
Region total	$ 17,495	$ 930,797
Region as percent of total U.S.	6.16%	5.51%
Region 2 - North Atlantic		
Delaware	$ 338	$ 46,000
Washington, D.C.		65,000
Maryland	12,659	316,200
New Jersey	7,500	634,000
New York	7,499	1,982,000
Pennsylvania	6,221	963,800
Region total	$ 34,217	$ 4,007,000
Region as percent of total U.S.	12.06%	23.71%

Table 1 (continued)

Region and State	Net Entitlement P.L. 874	Total Current Expenses
Region 3 - Great Lakes		
Illinois	$ 5,488	$ 900,000
Indiana	1,680	456,740
Michigan	2,706	770,000
Ohio	7,225	898,000
Wisconsin	841	351,900
Region total	$ 17,940	$ 3,376,640
Region as percent of total U.S.	6.32%	19.98%
Region 4 - Midwest		
Iowa	$ 1,129	$ 262,000
Kansas	6,404	206,000
Minnesota	1,535	365,000
Missouri	3,542	330,000
Nebraska	2,777	110,000
North Dakota	1,734	55,855
South Dakota	3,879	62,960
Region total	$ 21,000	$ 1,391,815
Region as percent of total U.S.	7.40%	8.24%

Table 1 (continued)

Region and State	Net Entitlement P.L. 874	Total Current Expenses
Region 5 - Southeast		
Alabama	$ 5,762	$ 214,000
Arkansas	1,867	119,106
Florida	8,902	419,256
Georgia	7,124	281,886
Kentucky	1,535	182,000
Louisiana	1,185	286,000
Mississippi	1,602	125,200
North Carolina	3,515	344,570
South Carolina	4,356	154,000
Tennessee	3,237	234,000
Virginia	20,246	303,800
West Virginia	160	123,816
Region total	$ 59,491	$ 2,787,634
Region as percent of total U.S.	20.96%	16.50%
Region 6 - Southwest		
Arizona	$ 6,045	$ 152,000
New Mexico	6,302	106,350
Oklahoma	8,744	186,000
Texas	16,506	825,360
Region total	$ 37,597	$ 1,269,710
Region as percent of total U.S.	13.25%	7.51%

Table 1 (concluded)

Region and State	Net Entitlement P.L. 874	Total Current Expenses
Region 7 - Mountain		
Colorado	$ 8,551	$ 197,515
Idaho	2,196	51,300
Montana	2,777	73,500
Utah	3,331	100,900
Wyoming	1,273	43,700
Region total	$ 18,128	$ 446,955
Region as percent of total U.S.	6.39%	2.76%
Region 8 - Pacific		
California	$ 49,362	$ 1,987,500
Nevada	1,905	39,700
Oregon	1,531	213,387
Washington	9,646	335,000
Region total	$ 62,444	$ 2,575,587
Region as percent of total U.S.	22.00%	15.24%
Region 9 - Non-Continental		
Alaska	$ 9,530	$ 32,500
Hawaii	5,778	58,350
Region total	$ 15,308	$ 90,850
Region as percent of total U.S.	5.39%	.54%

Sources: U.S. Dept. of Health, Education, and Welfare, Office of Education, Administration of Public Laws 874 & 815, Fourteenth Annual Report of the Commissioner of Education, June 30, 1964, Table 1, pp. 28-99; and Ibid., Digest of Educational Statistics, 1964 Edition, Table 41, p. 61.

The Pacific Region has the largest share of entitlements (22%), attributable to the overwhelming position occupied by California; districts in California received entitlements in 1964 totaling $49 million, more than twice that received by districts in Virginia, the next largest recipient state. Regions 1, 5, 6, 7, 8, and 9, with 74% of total entitlements each had a larger share of entitlements than of education expenses. The large proportion of entitlements in the Southeast (Region 5) is attributable mainly to Virginia; as none of the other southeastern states had entitlements more than 3% of current expenses.

The distribution of entitlements by district in 1960 in the form of a cumulative distribution, with school districts ranked in the descending sequence of the amount of entitlement, is shown in Table 2.* Fifty percent of the districts with the largest entitlements received 95% of the entitlements and accounted for over 88% of the current expenditures on education of entitled districts. More revealing of the skewness in the distribution of entitlements is the fact that the 4% of districts with largest entitlements accounted for 52% of the total entitlements. These districts accounted for a much lower proportion of expenditures on education, i.e., about one-third, indicating that the districts with the largest amounts of entitlement tend to be the smaller districts. On the average, entitlements account for 8% of current expenses for the 4% of districts with most of the entitlements. Thus, these districts which receive the most money are not, on the average, heavily dependent upon entitlements as a source of income.

The entitled districts, ranked by each district's entitlement as a percent of its current expenditures on education are shown in Table 3. The district at the 50% point in the cumulative number of districts, i.e., the median district, has entitlement equal to 3.46% of current expenses. The mean percentage for all entitled districts is 5.01% (the last point in cumulative distribution for this value). Sixty-three percent of districts have entitlements as a percent of current expenses below the

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* The left-hand column is the cumulative percent of number of school districts. Subsequent columns are the cumulative percentages for various measures. At any point in the distribution, the measure to that point is the sum of values to that point divided by the national total for that measure. The last column is the cumulative ratio of entitlement to total current expenditures. The total values are shown at the bottom of each column, thus the absolute values for any point can be calculated by applying the percentages in the distribution to the total values.

Table 2

CUMULATIVE DISTRIBUTION OF ENTITLEMENTS, CURRENT EXPENSES, AND ADA

PERCENT OF SCHOOL DISTRICTS	. . . . .CUMULATIVE PERCENTAGE.				
	ENTITLEMENT	TCE	ADA	ENTIT. ADA	RATIO OF CUMULATIVES ENTITLEMENT/TCE
0	2.61	0.20	0.12	0.62	0.13
1	28.59	20.14	18.89	26.02	1.43
2	39.16	25.24	24.32	35.11	1.96
3	46.43	29.77	29.49	41.83	2.32
4	52.24	33.51	33.28	46.66	2.62
5	56.92	37.52	37.42	50.89	2.85
6	60.58	40.34	40.34	54.22	3.04
7	63.79	43.34	43.75	57.07	3.19
8	66.37	45.57	46.41	59.77	3.32
9	68.57	48.07	48.77	61.81	3.43
10	70.51	50.02	50.68	63.52	3.53
11	72.23	51.78	52.37	64.97	3.62
12	73.86	53.54	54.11	66.43	3.70
13	75.34	54.95	55.57	67.77	3.77
14	76.69	57.21	57.50	68.96	3.84
15	77.93	59.02	59.37	70.18	3.90
16	79.10	60.77	61.06	71.29	3.96
17	80.18	62.29	62.61	72.38	4.02
18	81.19	63.51	63.85	73.39	4.07
19	82.14	65.23	65.60	74.35	4.11
20	83.03	66.55	66.75	75.14	4.16
21	83.84	67.95	68.09	75.92	4.20
22	84.51	69.22	69.26	76.59	4.24
23	85.34	70.13	70.16	77.29	4.27
24	[illegible]	71.45	71.41	77.96	4.31
25	86.55	72.41	72.30	78.56	4.34
26	87.24	73.26	73.19	79.13	4.37
27	87.79	74.47	74.32	79.63	4.40
28	88.31	75.61	75.36	80.14	4.42
29	88.81	76.57	76.24	80.60	4.45
30	89.28	77.35	77.03	81.03	4.47
31	89.72	78.24	77.83	81.44	4.49
32	90.15	78.95	78.55	81.88	4.51
33	90.57	79.63	79.25	82.33	4.54

Table 2 (continued)

PERCENT OF SCHOOL DISTRICTS	. . . . ENTITLEMENT	. . . . TCE	.CUMULATIVE PERCENTAGE. . . . ADA	. . . . . ENTIT. ADA	RATIO OF CUMULATIVES ENTITLEMENT/TCE . . . . .
34	90.96	80.28	79.90	82.72	4.56
35	91.34	80.91	80.50	83.08	4.57
36	91.70	81.76	81.37	83.45	4.59
37	92.05	82.39	81.98	83.76	4.61
38	92.38	82.87	82.48	84.08	4.63
39	92.70	83.47	83.10	84.40	4.64
40	93.00	84.07	83.72	90.25	4.66
41	93.29	84.63	84.25	90.54	4.67
42	93.57	85.25	84.83	90.79	4.69
43	93.84	85.66	85.25	91.04	4.70
44	94.10	86.16	85.74	91.29	4.71
45	94.35	86.57	86.17	91.53	4.72
46	94.59	87.02	86.61	91.77	4.74
47	94.82	87.44	87.10	92.01	4.75
48	95.04	87.83	87.51	92.24	4.76
49	95.25	88.23	87.92	92.45	4.77
50	95.46	88.77	88.56	92.69	4.78
51	95.65	89.17	88.97	92.89	4.79
52	95.84	89.47	89.29	93.08	4.80
53	96.03	89.94	89.72	93.24	4.81
54	96.21	90.34	90.18	93.41	4.82
55	96.38	90.71	90.56	93.59	4.83
56	96.55	91.06	90.91	93.76	4.83
57	96.71	91.41	91.27	93.92	4.84
58	96.86	91.80	91.68	94.08	4.85
59	97.01	92.06	91.98	94.23	4.86
60	97.15	92.48	92.32	97.02	4.87
61	97.29	92.72	92.59	97.15	4.87
62	97.42	92.92	92.81	97.27	4.88
63	97.55	93.17	93.09	97.39	4.89
64	97.68	93.49	93.35	97.51	4.89
65	97.80	93.79	93.67	97.64	4.90
66	97.92	94.14	94.11	97.76	4.90

Table 2 (concluded)

PERCENT OF SCHOOL DISTRICTS	. . . . ENTITLEMENT	. . . . .CUMULATIVE TCE	PERCENTAGE. . . . . ADA	. . . . . ENTIT. ADA	. . . . . RATIO OF CUMULATIVES ENTITLEMENT/TCE
67	98.04	94.50	94.40	97.89	4.91
68	98.14	94.73	94.62	98.00	4.91
69	98.25	94.95	94.82	98.10	4.92
70	98.35	95.22	95.11	98.21	4.93
71	98.45	95.44	95.33	98.31	4.93
72	98.54	95.66	95.52	98.40	4.93
73	98.63	95.87	95.72	98.48	4.94
74	98.72	96.05	95.91	98.57	4.94
75	98.80	96.24	96.12	98.65	4.95
76	98.88	96.40	96.29	98.74	4.95
77	98.96	96.62	96.52	98.82	4.96
78	99.03	96.85	96.72	98.90	4.96
79	99.10	96.98	96.84	98.97	4.96
80	99.17	97.13	96.96	99.03	4.97
81	99.24	97.23	97.06	99.09	4.97
82	99.30	97.37	97.20	99.15	4.97
83	99.36	97.55	97.38	99.22	4.98
84	99.41	97.70	97.54	99.29	4.98
85	99.47	97.82	97.69	99.35	4.98
86	99.52	98.03	97.93	99.41	4.98
87	99.57	98.14	98.03	99.46	4.99
88	99.62	98.28	98.17	99.51	4.99
89	99.66	98.44	98.34	99.56	4.99
90	99.70	98.57	98.47	99.61	4.99
91	99.74	98.70	98.59	99.65	4.99
92	99.78	98.87	98.80	99.71	5.00
93	99.82	98.97	98.91	99.75	5.00
94	99.85	99.07	99.01	99.78	5.00
95	99.88	99.14	99.09	99.82	5.00
96	99.91	99.29	99.25	99.86	5.00
97	99.94	99.38	99.34	99.90	5.00
98	99.96	99.45	99.41	99.93	5.01
99	99.99	99.86	99.86	99.96	5.01
100	100.00	100.00	100.00	100.00	5.01
3808	$171,062,726	$3,493,850,178	10,110,388	1,616,831	

Table 3

CUMULATIVE DISTRIBUTION OF ENTITLEMENTS, CURRENT EXPENSES, AND
ADA, RANKED BY RATIO OF ENTITLEMENT TO EXPENSE

		. . .CUMULATIVE PERCENTAGE. . .			.RATIO OF CUMULATIVES.	
PERCENT OF DISTRICTS	NON-CUMULATIVE ENTITLEMENT/TCE	ENTITLEMENT	TCE	ADA	ENTIT. ADA	TCE/ADA
0	94.72	0.04	0.00	0.00	0.01	306.31
1	53.29	5.67	0.42	0.40	1.90	364.09
2	41.22	8.42	0.72	0.71	3.40	346.97
3	33.29	11.14	1.08	1.08	5.04	345.72
4	27.76	12.67	1.33	1.30	5.98	353.88
5	24.20	14.60	1.71	1.76	7.63	334.87
6	21.68	16.36	2.10	2.23	9.17	323.88
7	19.65	19.94	2.97	3.32	12.18	308.18
8	18.18	23.82	3.99	4.43	15.64	309.96
9	16.85	25.69	4.52	5.01	17.30	311.03
10	15.72	27.64	5.11	5.67	19.06	310.73
11	14.88	28.48	5.39	6.01	19.96	308.75
12	14.02	31.50	6.44	7.12	22.76	311.33
13	12.93	32.81	6.92	7.73	24.04	308.71
14	12.24	34.50	7.60	8.54	25.88	306.46
15	11.55	36.51	8.44	9.55	27.99	304.78
16	11.07	38.30	9.24	10.30	29.58	308.88
17	10.63	39.73	9.90	11.19	31.25	304.88
18	10.08	40.60	10.32	11.61	32.01	306.28
19	9.55	41.73	10.90	12.18	33.09	308.18
20	9.18	44.24	12.23	13.83	35.70	304.67
21	8.71	46.70	13.62	15.21	38.36	308.42
22	8.29	50.52	15.87	17.72	42.35	308.59
23	7.91	52.08	16.82	18.87	44.10	307.27
24	7.59	52.59	17.16	19.26	44.64	306.98
25	7.39	54.13	18.19	20.50	46.28	305.75
26	7.07	56.51	19.82	22.01	48.46	310.28
27	6.86	59.40	21.89	24.18	51.83	312.13
28	6.57	61.12	23.18	25.62	53.49	311.75
29	6.32	61.88	23.78	26.18	54.21	312.96
30	6.11	63.12	24.78	27.18	55.35	314.14
31	5.93	64.41	25.84	28.37	56.51	313.81
32	5.70	65.37	26.66	29.18	57.52	314.83
33	5.53	65.87	27.11	29.73	58.07	314.20

Table 3 (continued)

PERCENT OF DISTRICTS	NON-CUMULATIVE ENTITLEMENT/TCE	. . . .CUMULATIVE	PERCENTAGE. . .		.RATIO OF CUMULATIVES.	
		ENTITLEMENT	TCE	ADA	ENTIT. ADA	TCE/ADA
34	5.36	66.48	27.67	30.44	58.67	313.27
35	5.20	67.37	28.50	31.19	59.55	314.85
36	5.08	67.84	28.97	31.66	65.56	315.26
37	4.94	68.47	29.59	32.39	66.20	314.79
38	4.80	69.05	30.20	33.12	66.88	314.15
39	4.64	69.49	30.66	33.72	67.33	313.34
40	4.47	70.15	31.38	34.47	67.91	313.69
41	4.36	70.83	32.16	35.31	68.56	313.85
42	4.25	71.76	33.25	36.46	69.47	314.21
43	4.14	72.16	33.73	36.97	69.85	314.36
44	4.02	73.03	34.80	38.18	70.81	314.09
45	3.92	73.58	35.51	38.89	71.43	314.53
46	3.82	74.80	37.09	40.36	72.57	315.60
47	3.72	76.37	39.16	42.09	74.13	316.21
48	3.60	77.63	40.92	44.47	75.17	317.07
49	3.52	78.04	41.50	45.12	75.63	316.90
50	3.46	78.47	42.12	45.83	76.13	316.67
51	3.36	79.02	42.92	46.63	76.64	317.13
52	3.27	79.89	44.24	47.78	77.43	319.01
53	3.19	80.54	45.24	49.01	78.16	318.01
54	3.12	81.27	46.40	50.09	78.93	319.21
55	3.06	81.75	47.18	50.89	79.43	319.42
56	3.00	82.18	47.90	51.66	79.89	319.35
57	2.93	82.61	48.62	52.45	80.29	319.42
58	2.86	83.00	49.30	53.12	80.70	319.73
59	2.78	83.57	50.31	54.07	81.23	320.56
60	2.71	84.01	51.12	54.82	81.61	321.24
61	2.64	84.47	51.97	55.60	82.07	322.04
62	2.56	85.27	53.50	57.22	82.77	322.16
63	2.53	86.32	55.58	59.29	83.87	322.47
64	2.48	87.29	57.51	60.91	84.70	325.37
65	2.40	87.66	58.27	61.54	85.04	326.21
66	2.34	87.96	58.90	62.09	85.31	326.53

Table 3 (concluded)

		. . . CUMULATIVE PERCENTAGE. . .			.RATIO OF CUMULATIVES.	
PERCENT OF DISTRICTS	NON-CUMULATIVE ENTITLEMENT/TCE	ENTITLEMENT	TCE	ADA	ENTIT. ADA	TCE/ADA
67	2.29	88.35	59.76	63.00	85.69	326.81
68	2.24	88.74	60.62	63.88	86.09	326.96
69	2.19	89.15	61.54	64.79	86.47	327.24
70	2.13	89.98	63.46	66.66	87.41	327.97
71	2.09	90.69	65.12	67.98	88.05	330.06
72	2.04	92.10	68.51	70.69	89.15	333.94
73	1.98	92.51	69.55	71.68	89.59	334.33
74	1.94	92.84	70.38	72.52	89.93	334.37
75	1.89	93.20	71.32	73.65	90.32	333.62
76	1.83	93.42	71.93	74.30	90.55	333.55
77	1.77	93.83	73.05	75.57	90.96	333.07
78	1.72	94.28	74.34	76.76	91.43	333.66
79	1.66	94.52	75.05	77.42	91.66	334.00
80	1.61	94.77	75.82	78.12	91.92	334.40
81	1.56	95.18	77.12	79.26	92.31	335.23
82	1.52	95.55	78.34	80.47	92.73	335.39
83	1.47	95.84	79.30	81.42	93.00	335.60
84	1.42	96.17	80.44	82.38	93.28	336.44
85	1.39	96.49	81.60	83.44	93.58	336.95
86	1.35	96.73	82.48	84.31	93.83	337.06
87	1.31	96.96	83.32	85.11	94.04	337.29
88	1.24	97.35	84.88	86.44	94.39	338.35
89	1.19	97.57	85.75	87.31	94.61	338.39
90	1.15	97.98	87.51	88.89	95.02	339.20
91	1.10	98.36	89.22	90.46	95.45	339.80
92	1.07	98.58	90.20	91.24	95.64	340.65
93	1.03	98.75	91.04	91.92	98.46	341.27
94	0.98	98.96	92.09	92.83	98.68	341.81
95	0.91	99.24	93.55	94.15	99.00	342.37
96	0.85	99.52	95.19	95.55	99.31	343.25
97	0.77	99.73	96.48	96.61	99.52	344.06
98	0.62	99.84	97.21	97.21	99.64	344.53
99	0.37	99.93	98.14	98.12	99.81	344.62
100	0.01	100.00	100.00	100.00	100.00	344.55
3808		$174,962,726	$3,493,850,478	10,140,388	1,616,834	

mean value, again indicating the skewness of the distribution. The 37% of the districts with percentages above the mean value accounted for 68% of entitlements, but only 29% of current expenses of education, indicating that the districts heavily entitled in terms of percent of costs met by entitlement tend very much to be the smaller districts. These more heavily entitled districts generally have lower current expenses of education per ADA, as shown in Table 3. Most districts receiving entitlements have only a small proportion of their costs met by entitlement; Table 3 shows that 72% of entitled districts have entitlements less than 10% of current expenses. These districts receive, however, 60% of total entitlements. On the other hand, districts with entitlement more than 10% of cost have on the average 44% of ADA entitled.

Comparison of Financial and Socioeconomic Characteristics of School Districts

Financial data on 5,000 school districts in the United States, representing all fifty states, are available for the year 1959-60. Socioeconomic data on a subsample of 1,100 of these districts are also available. School districts in the sample were classified as to whether they received net entitlements under P.L. 874 in that year, and the financial and socioeconomic characteristics of districts receiving entitlement were compared with those of districts not receiving entitlements. The comparisons were made by calculating the unweighted means of the values for each district on a national and regional basis. The mean of each characteristic for the entitled districts was subtracted from the mean of each characteristic for the nonentitled districts; the results are shown in Table 4. The difference in means was divided by the means of the entitled districts, to determine the relative importance of the difference as a percent of the absolute value. These results are shown in Table 5.*

How the entitled districts compare with nonentitled districts is summarized below:

1. Current expenses of education are somewhat lower

2. Instruction costs as a percent of current expenses are slightly higher

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* See Appendix C for discussion of sources of data and method of calculation. The estimated values of the means are also shown in this appendix.

Table 4

DIFFERENCES BETWEEN ENTITLED AND NONENTITLED SCHOOL DISTRICTS
IN FINANCIAL AND SOCIOECONOMIC CHARACTERISTICS*†

Characteristics	Region‡								All States§
	1	2	3	4	5	6	7	8	
1. TCE/ADA ($/ADA)		24	12	37		79	176	71	38
2. Instruction costs/TCE (%)	-5.6		-1.1	1.6	-2.2	-1.6	-2.0	-3.2	-2.3
3. Transportation costs/TCE (%)	4.4	-1.4	1.3		1.7	2.6	2.3	2.8	1.8
4. Elementary ADA/total ADA (%)	2.4		4.5			10.1	7.5	7.3	1.7
5. Elementary pupils per teacher	-.9	-.63		-4.6	-.60	-3.8	-6.4	-4.4	-2.6
6. Secondary pupils per teacher	-1.5		-1.7		-.78	-3.2	-3.0	-1.8	-1.2
7. Local and intermediate revenue/ADA ($/ADA)	31	33	32	72		89	182	91	77
8. State and federal revenue/ADA ($/ADA)			-15	-46		-13		-46	-34
9. Local and intermediate revenue/total revenue (%)		3.2	4.2	8.9		9.2	9.7	11.6	10.8
10. Median family income ($)	427			**	-485		**		
11. Population density (00's of persons per sq. mi.)				↓		-7.5	↓	-10.0	
12. Percent in nonpublic schools (%)			5.7	↓	-.69	-4.3	↓		3.3
13. Median years of education		.36		↓	-.76		↓	-.47	-.39
14. Percent in white-collar occupations (%)	2.2			↓	-4.6	-8.2	↓		-2.0
15. Percent with incomes over $10,000 (%)	3.6			↓	-1.0		↓		1.1
16. Percent of population under 18 (%)	-.9	-1.4	-2.6	↓			↓		-1.2
17. Percent of nonwhite residents (%)		-2.7		↓	6.1	8.5	↓	-4.6	
18. Percent moved into school district in last 5 years (%)	-5.2	-5.9	-3.4	↓	-6.1	-3.2	↓	-5.7	-5.5
19. Salary of beginning teacher ($)	92		83	↓		182	↓	-97	80

* A positive number shows that the nonentitled mean value is greater than the entitled.

† A blank space shows that there are fewer than two chances in three that the means are drawn from different population, i.e., the standard error of the difference is less than one.

‡ State composition of regions is shown in Table 1.

§ Region 9 omitted because of insufficient data.

** Insufficient data in sample.

Table 5

DIFFERENCES BETWEEN ENTITLED AND NONENTITLED SCHOOL DISTRICTS IN FINANCIAL AND SOCIOECONOMIC CHARACTERISTICS AS PERCENTS OF SAFA DISTRICT CHARACTERISTICS*+

Characteristics	Region±								All States
	1	2	3	4	5	6	7	8	
1. TCE/ADA	%	6%	3%	12%	%	24%	50%	17%	11%
2. Instruction costs/TCE	++		-2	2	-3	-2	-3	-4	-3
3. Transportation costs/TCE	71	-22	24		27	54	36	63	32
4. Elementary ADA/total ADA	3		7			16	12	11	3
5. Elementary pupils per teacher	-4	-3		-19	-2	-15	-25	-17	-10
6. Secondary pupils per teacher	-8		-8		-4	-16	-15	-9	-6
7. Local and intermediate revenue/ADA ($/ADA)	10	11	11	28		54	74	38	36
8. State and federal revenue/ADA			-11	-33		-6		-17	-18
9. Local and intermediate revenue/total revenue		6	6	13		22	17	26	21
10. Median family income	7			**	-12		**		
11. Population density				↓		-66	↓	-29	
12. Percent in nonpublic schools			37	↓	-25	-50	↓		32
13. Median years of education		3		↓	-8		↓	-4	-4
14. Percent in white-collar occupations	5			↓	-14	-19	↓		-5
15. Percent with incomes over $10,000	20			↓	-14		↓		8
16. Percent of population under 18	-3	-4	-7	↓			↓		-3
17. Percent of nonwhite residents		-40		↓	25	126	↓	-61	
18. Percent moved into school district in last 5 years	-30	-28	-17	↓	-32	-13	↓	-19	-26
19. Salary of beginning teacher	2		19	↓		5	↓	-2	2

* A positive number shows that the nonentitled mean value is greater than the entitled.

+ A blank space shows that there are fewer than two chances in three that the means are drawn from different population, i.e., the standard error of the difference is less than one.

± State composition of regions is shown in Table 1.
Region 9 omitted because of insufficient data.

** Insufficient data in sample.

++ Less than 1%.

Source: Appendix Table C-1.

3. Transportation costs as a percent of current expenses are somewhat lower

4. Ratio of elementary to total ADA is slightly lower

5. Pupil/teacher ratios are somewhat higher

6. Local and intermediate revenues per ADA are considerably lower

7. State and federal revenues per ADA are considerably higher

8. Local and intermediate revenues as a percent of total revenues are considerably lower

9. Percent of children in nonpublic schools is considerably lower

10. Median years of education somewhat higher

11. Percent in white collar occupations is somewhat higher

12. Percent of families with incomes over $10,000 is somewhat lower

13. Percent of population under 18 years is slightly higher

14. Percent of population moved into district in last five years is considerably higher

15. Salary of beginning teachers is slightly lower.

Entitled districts spend less on education than do nonentitled districts. The lower amount of spending is reflected in higher pupil/teacher ratio at both the elementary and high school levels. Contrary to opinion often expressed, entitled districts have slightly lower proportions of pupils in the elementary grades, which are the less expensive grades. The strongest distinction between entitled and nonentitled districts is the considerably lower local revenue per pupil, partly balanced by the higher state and federal funds per pupil. Clearly, nonentitled districts make a considerably larger local effort.

On the whole, entitled districts do not appear to be either richer or poorer than nonentitled districts, though they do appear to have less stable populations, with considerably higher proportions of recent migrants in the population.

Most of the regions echo the character differences found at the national level, although some distinctions emerge. New England (Region 1) is the only region in which nonentitled districts have significantly higher median family incomes, yet this region and Region 5 are the only regions that do not show nonentitled districts spending more per pupil than do entitled districts. In Region 5 (the Southeast), this is consistent with the fact that it is the only region in which the entitled districts display higher median family incomes than do nonentitled districts. In the South, the entitled districts also have higher levels of adult education achievement, higher percent of pupils in nonpublic schools, considerably higher percent of white collar workers, and lower percent of nonwhites.

The Southeast is the only region that does not show entitled districts with lower local and higher state and federal funds per pupil. Three other regions--1, 2, and 7--however, do not show entitled districts with significantly more state and federal funds, although they do show entitled districts with lower local funds. Other comparisons can be made by reference to the tables

The Obligation of the Federal Government to Affected School Districts

The nature of the obligation of the federal government to support local educational agencies (school districts) in providing free public education to children whose parents work or live on federal property is set forth in Section 3 of P.L. 874, and will be discussed below.

The basic intent of Section 3 of P.L. 874 is to assure that children living on federal property will receive education in the local public schools comparable to that received by nonfederally connected local children, without imposing a special burden on the local school district. The definition of "burden" consistent with the stated purpose of P.L. 874 and 815 is "the costs of education incurred for federally connected pupils not met by normally available local and state revenues." The rationale for federal aid is as follows: school districts raise local funds for school purposes primarily from taxes on business and residential property. It is thus the work places and residences of families that provide the local financial resources to support expenditures on education. If the federal government sends children to the local schools without also providing the tax base for educational finance, it is creating a burden upon the affected school districts.

There are two principles of obligation that could be used to justify federal payment to local school districts. First, the federal government should provide the school districts with funds equal to the amount they would have received if the federal government had been a private taxpaying enterprise; second, the federal government should compensate the local educational agency for local costs of education incurred for federally connected children, not covered by other local sources associated with the children and their families. The two principles will result in the same payment only under restrictive assumptions: (1) the private enterprise for which the federal facility apparently substitutes must contribute the same revenues per pupil as the average of the existing local enterprises; (2) the marginal cost of education must be equal to the average cost; and (3) both the work places and the employee residences must be located inside the affected school district.

Federally connected pupils are divided into two categories. The first category is the pupil who both lives on federal property and whose parent works on federal property. Payment for this pupil is provided for in Section 3(a) of the law, and he is henceforth referred to as a "3(a) pupil." The second category is the pupil who either lives on federal property, or has a parent who works on federal property. Payment for this pupil is provided for in Section 3(b) of the law, and is made at a rate one-half that for a 3(a) pupil. If the pupil lives on federal property he is henceforth referred to as a "3(b)1 pupil"; and if his parent works on federal property, he is referred to as a "3(b)2 pupil:"

If it is the intent of P.L. 874 to compensate for the lack of property tax base in the school district, a reasonably clear case can be made for pupils entitled under Subsection 3(a), since neither the place of work nor the place of residence creates any taxable property. Thus, the facility provides no direct contribution to either residential or commercial property values.

In the case of 3(b)1 pupils (those whose parents live on federal property, but do not work on federal property), it is the contribution of residential property taxes by the employees that is lacking. It is possible that a fairly reliable estimate of the foregone tax revenues can be obtained in these cases by estimating the value of the federal housing, or by estimating the value of private residential property which the federal families would be likely to occupy.

In the case of 3(b)2 pupils (those whose parents work on federal property, but do not live on federal property), the contribution of the business property tax provided by the employees work place is lacking. However, there is seldom a basis for estimating the amount of this loss. The federal facility is often of a kind that has no private counterpart, such as an air base; or one for which there may be a technical counterpart, but not necessary a private demand, such as a shipyard. Some normative approach might be taken in attempting to place a value on the federal property, such as computing the value of the industrial property per capita in the area; but this is an arbitrary procedure, difficult to quantify and difficult to justify. It has merit only in those cases where the federal facility clearly substitutes for a private facility, because of the scarcity of equivalent industrial property. Professor Davie suggests that the opportunity cost of the land could be used as the measure of value.* The opportunity cost is the value of the land in its best alternative use. Thus, the alternative use for an airport may be as farmland, if there is insufficient demand for industrial or commercial land. In practice, determination of the value of land in its next best alternative use is extremely difficult. It may also be postulated that such use will often bring little revenue in rural areas or elsewhere, except where land is scarce.

In fact, the value of the federal property does not enter into the determination of payments under P.L. 874, which appears to represent an uncomfortable marriage between the cost burden and in-lieu-of-tax principles. The need for aid arises because of the cost burden imposed upon school districts; where there are no federal pupils, there is no aid regardless of the value of federal property. In addition, the rate at which payments will be made for federally connected pupils under Section 3(a) is based on the cost of education and thus the burden incurred. However, the justification for giving federal funds is made in terms of the in-lieu-of-tax principle. In many instances there are conflicts that arise in attempting to justify payments under certain conditions. These conflicts generally reflect the divergence between the answer obtained by applying the burden principle and the in-lieu-of-tax principle. An important example of such a conflict arises in the case of a 3(b) pupil whose parent commutes to a federal property outside the district of residence. In this case, a burden may exist because of the inability of residential property to support the schools, whereas the justification for payment under a strict interpretation of the in-lieu-of-tax principle does not exist. It is argued that the district would receive no revenue from the place of work in this case, even if the property had been taxpaying, and thus there is no obligation on the federal government to support the school district which contains the taxpaying residence. To resolve this conflict, "a consensus as to which policy attitude the federal government should adopt," must, according to Professor Davie, be reached.†

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* Davie, _op. cit._, p. 9.

† _Ibid._, p. 16.

A major objection to the in-lieu-of-tax approach can be raised on the grounds of equity. School district boundaries are often determined in unfair and inefficient ways, often with the intent of relieving industrial properties of the burden of supporting the schools attended by the offspring of their employees.* The creation of the "City of Industry" in Southern California (and elsewhere) exemplifies this approach. The state governments in their equalization programs partly compensate for the inequitable and rather arbitrary distribution of business property among school districts.

It can hardly be claimed that the federal government should be a party to the "City of Industry" concept. It is certainly true that the school district containing the pupils' residences bears the burden of financing education, whether or not the parents' place of work is in that district. It is further the case that for a very large facility, such as an air base, the residences of the personnel will be spread over a wide area, and perhaps in a large number of school districts. There is no justification for saying that the one district that happens to have the air base within its boundaries should receive all the federal funds for support of federal pupils, while the other districts receive none.

P.L. 874 operates to distribute funds among school districts that claim entitlement on a single large piece of federal property, as if the property were split among these districts in the same proportion as are the employees' residences. This procedure recognizes the essentially political nature of school district boundaries. It makes the distribution as if the many school districts that receive pupils from the property were one district, and as if the pupils and the properties that provide the tax base to support the pupils' education were in the same district. This may not be a correct assumption in terms of political reality, but it is correct in terms of economic logic.

The Tinker Air Force Base is an often-cited example, in which 104 school districts claim entitlement for children living within their boundaries. The base, of course, is within only one district. P.L. 874 would certainly not serve to relieve the burden of federal impact if all of the money were given to that one district, leaving the other 103 districts to support the federally connected children totally on local and state resources. The following table prepared by the Office of Education provides other examples of large military facilities claimed by a large number of school districts for entitlement. (See Table 6.)

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* J. Burkhead, State and Local Taxes for Public Education, Syracuse University Press, 1963, pp. 44-45.

Table 6

REPRESENTATIVE MAJOR MILITARY BASES
WITH NUMBER OF SCHOOL DISTRICTS CLAIMING ENTITLEMENT
FY 1958

Military Installations	No. of School Districts
McClellan Air Force Base, North Sacramento, California	81
Presidio of San Francisco, California	98
Mather Air Force Base, Sacramento, California	71
Naval Base, Harbor Drive, San Diego, California	129
Air Force Academy, Colorado	26
White Sands Missile Range, New Mexico	10
Fort Sill, Lawton, Oklahoma	55
Tinker Air Force Base, Midwest City, Oklahoma	104
Fort McClellan, Anniston, Alabama	24
Fort Chaffee, Fort Smith, Arkansas	21
Fort Benning, Georgia	49
Scott Air Force Base, Belleville, Illinois	24
Air Force Plant #2 (B.O.P.-G.M.C.), Kansas City, Kansas	58
Fort Knox, Kentucky	26
Naval Base, Kittery, Maine	55
Boston Army Base, Massachusetts	63
Naval Industrial Reserve Aircraft Plant, Kansas City, Mo.	77
Fort Monmouth - Main Post, Red Bank, New Jersey	39
New York Naval Shipyard, Brooklyn, New York	65
Naval Industrial Reserve Aircraft Plant Columbus, Ohio	54
Olmsted Air Force Base, Middletown, Pennsylvania	62
Naval Base, Newport, Rhode Island	34
Air Force Plant #4, Fort Worth, Texas	75
Fort Hood, Killeen, Texas	53
Naval Industrial Reserve Aircraft Plant, Dallas, Texas	66
Air Force Plant #17 (Boeing Plant #2), Seattle, Washington	47
Puget Sound Naval Shipyard, Bremerton, Washington	42
Total School Districts	1,508
Total Bases	27

Source: U. S. Dept. of Health, Education, and Welfare, Office of Education, May 12, 1959.

The above discussion would indicate that any attempt to devise an aid formula on an in-lieu-of-tax basis would result in an inordinate increase in the complexity of the law, and at the same time introduce features that will distort the distribution of funds and decrease the equity of the distribution.

P.L. 874, in fact, recognizes the legitimacy of the second concept of obligation; i.e., to provide funds equal to the local contribution for education, less the amount that the local agency could expect to derive directly through taxes from the federally connected family. Under this principle, the federal government considers that its obligation is to create what we will term "intradistrict equalization"; that is, the payment of funds sufficient to make the revenues available for each federal pupil equal to the revenues available for each nonfederal pupil. (This concept will be defined more fully in later sections.)

Providing less funds for 3(b) than for 3(a) pupils is fully consistent with this approach, since 3(b) pupils create some local revenues. Considering a 3(b) pupil as one-half a 3(a) pupil assumes that the place of residence and the place of work each contribute half the local revenues. This assumption has been highly criticized, since it is believed that the place of residence contributes more than half the total assessed value of a local district.* (See Chapter 4 for discussion on 3(b) pupils.)

A question may be raised as to whether the obligation of the federal government is permanent or temporary. Does the local agency "recover" from the ill-effects of "impact," or does the impact remain a burden? It will be shown that the federal obligation for pupils whose parents work or live on federal property is a permanent obligation because there is a permanent reduction in the tax base per pupil when that base is mostly property taxes. The various case and statistical studies conducted for this report demonstrate that there is a permanent reduction in the local ability to finance education. Thus, if federal payments were terminated and the federal installation remains, the impacted community will permanently suffer from having a lower tax base than neighboring or "comparable" communities which do not have federal connection.

It is explicitly stated that the federal obligation is confined to the local educational agency.

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* Labovitz, _op_. _cit_., p. 159.

> There is no compensation for any loss in state revenues . . . . The reason for not providing in the bill for any payment paralleling the state share in the cost of educating children who reside on or whose parents are employed on federal property is that the tax-exempt status of the property in question does not normally operate to reduce to any appreciable extent state revenues or otherwise to render the state less able to make its normal contribution with respect to such children. Through sales, gasoline, income, and other forms of taxation, state governments are realizing or could realize substantially as much revenue from the parents of these children as they realize in the case of anyone else in the state.[*]

This assumption may not be completely valid, since some state taxes are not paid by military personnel who purchase in military commissaries, and a certain portion of state income tax is not paid by persons retaining out-of-state residences while residing in the affected community. The extent to which these factors actually serve to reduce state revenues is unknown and was not explored in this study. We accept the premise of the law that state revenues are not reduced by the fact of federal impact, and that the entire burden falls on the property tax base of local governments.

Criteria to Evaluate Federal Payment Under P.L. 874

Federal Payment and Intradistrict Equalization

In the House Committee report accompanying H.R. 7940, it was stated that it is the intent of the law for payment per federally connected child to be at a rate "equal to the current expenditures per child made from revenues from local sources in school districts in the state which are comparable to the school district of the educational agency whose payments are being computed."[+] Thus, the local contribution rate is to be based not on the local revenues of the recipient district but on those of some group of comparable districts. The intent is to pay a district on the basis of a rate that would exist if there were no federal pupils. The report recognized that the local revenues available per child in the federally connected district are affected by the presence of the federal children, thus "it would not be reasonable to consider merely current expenditures met from local revenues of the district in question."[±]

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[*] House of Representatives, *op. cit.*, p. 13.

[+] *Ibid.*, p. 12.

[±] *Ibid.*, p. 14.

The selection of "most nearly comparable" districts has proven to be an almost impossible task (see Chapter 4). In determining which districts are comparable, factors to be considered are: classification under state law, number and kind of school population, tax resources, tax efforts (rates), costs of school maintenance and operation, etc. Part of the problem is that some of these variables, especially tax resources, are affected by the federal activity. The expectation implicit in the law is that all the districts would be comparable to the affected district either in the absence of federal impact, or if federal payment was fully successful in compensating for the absence of local tax revenues.

For a district with a viable, independent, nonfederal sector that comprises the majority of the district's population and work force, the most comparable district is itself, with the federal impact removed. For a district in which the federal activity predominates, such a comparison is not meaningful. For predominantly federal districts, the delineation of a comparable district is theoretically very difficult. Another district with the same local contribution rate (LCR), but without federal impact is likely to be dissimilar in other respects. An example of a district in which federal domination molds the character of the district is Vallejo, California (see Volume II). It is a city historically dominated by the presence of the U.S. Navy's Mare Island Shipyard. Because of this domination, the district tends to have much lower assessed values per pupil and lower levels of local contribution than do nonfederal areas with similar family income levels. Thus the proper LCR to meet the burden of federal connection in Vallejo would be at a higher rate than the local share of expenses actually incurred in Vallejo.

Fortunately for our analysis, a typical entitled district generally contains a federal sector that is less than half of the district's total economy. Seventy-two percent of entitled districts had entitlements in 1959-60 that comprised less than 10% of their current expenses of education; these districts received 60% of total net entitlements. For these districts, the proper payment to relieve the federal burden is that which, when added to local and normal state revenues available for federally connected pupils, results in the same total revenues per pupil for both federally connected and nonfederal pupils. For more heavily entitled districts this measure may miss much of the dynamic and more pervasive effects of federal connection. Such a payment is termed, for this analysis, the "intradistrict equalization payment"; i.e., the payment that equalizes revenues for federal and nonfederal pupils within a district.

The federal government's obligation for relieving the burden on local districts is expressed entirely in terms of local revenue sources.

It is believed that the state governments will not distinguish between federal and nonfederal pupils and that state sources of revenue are not adversely affected by federal activity. Thus, the intradistrict equalizing formula is expressed entirely in terms of local revenue sources. The federal payment that is necessary to create this equality can be simply stated by the following equation:

(1) $F_e/N_f = L_n/N_n - L_f/N_f$,

where F_e = federal payment for intradistrict equalization

L_f = local share of current expenses paid by property taxes of federally connected families (including in-lieu-of-tax payments)

L_n = local share of current expenses paid by other property taxes

N_n = ADA of nonfederal pupils

N_f = ADA of federal pupils

Local revenues from federal pupils (L_f) will be zero for pupils under Section 3(a), since there will be no property taxes derived from residences or places of work. Section 3(b) pupils will have some local property taxes attributed to them. For 3(b)2 pupils--those whose parents work on federal property, but do not live on federal property--the value of their residential taxes will be included in L_f. For 3(b)1 pupils who live on federal property, but whose parents do not work on federal property, the allocated value of work place will be included. The equation provides for a value of F_e that is higher for 3(a) than for 3(b) pupils, and no separate accounting is necessary.

Equation (1) may be alternatively stated as follows:

$$(F_e + L_f)/N_f = L_n/N_n$$

That is, equality between federal and nonfederal pupils is achieved when the per pupil sum of federal payments and local revenues for federal pupils is equal to the per pupil local revenues for nonfederal pupils. Total payments required are as follows:

(1a) $F_e = N_f \cdot L_n/N_n - L_f$.

F_e is not to be interpreted as the amount that the federal government should pay, for there is no a priori reason why intradistrict equalization should be the only goal of the federal payment. However, F_e does represent the burden of federal connection on the local district, and it is the elimination of this burden that is the major expressed purpose of the law.

Exclusion of Indirect and Induced Revenues from L_f

In equation (1) only the local revenues directly associated with federal pupils (L_f) are used to calculate intradistrict equalization. The revenue structure is much more complex than this, however, since the federal activity generates economic change in the area that affects both the costs and revenues of a local school district.

The federal activity creates impacts on a local area in three ways: (1) direct impact, equal to the employment and payrolls of the facility; (2) indirect impact, equal to the local employment and income generated by sales of local businesses to the facility; and (3) induced impact, equal to the local employment and income resulting from the consumption purchases of the facility employees (and others which, however, are sufficiently small to be ignored). All these economic changes create property values to help finance public education and other local public services. They also create population changes that increase school enrollment. The net effect on school finances is the balance between increases in property values and increases in school enrollments. As shown by Werner Hirsch, it is not at all certain that the balance will be favorable.*

How these various impacts relate to school finance is schematically shown in Figure 1.

To be theoretically correct, L_f should include all the revenue changes directly and indirectly associated with the federal activity.

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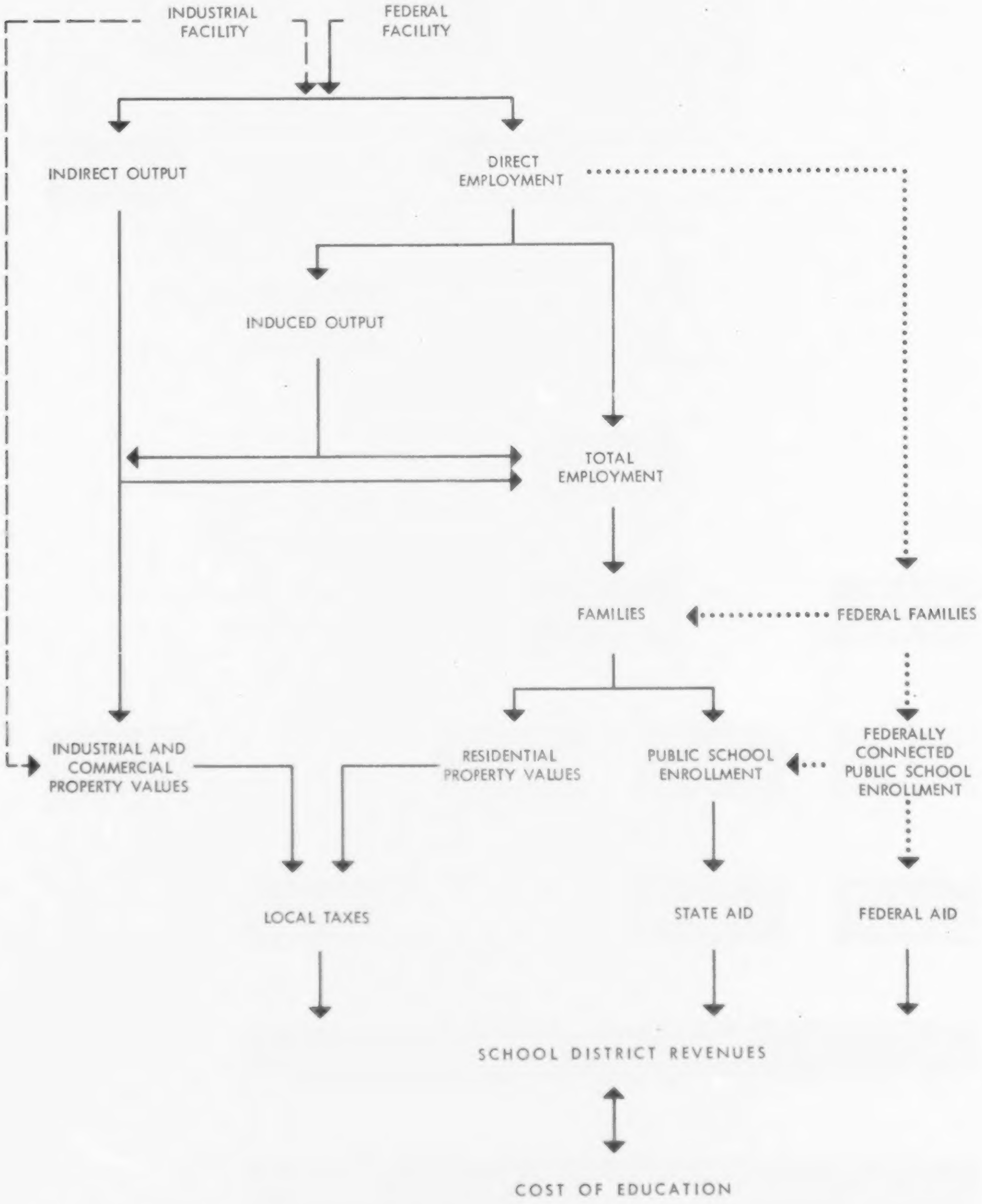
* W. Hirsch, "Fiscal Impact of Industrialization on Local Schools," Review of Economics and Statistics, May 1964.

FIGURE 1

IMPACT OF FEDERAL FACILITY ON SCHOOL DISTRICT REVENUES


INDUSTRIAL FACILITY
FEDERAL FACILITY
INDIRECT OUTPUT
DIRECT EMPLOYMENT
INDUCED OUTPUT
TOTAL EMPLOYMENT
FAMILIES
FEDERAL FAMILIES
INDUSTRIAL AND COMMERCIAL PROPERTY VALUES
RESIDENTIAL PROPERTY VALUES
PUBLIC SCHOOL ENROLLMENT
FEDERALLY CONNECTED PUBLIC SCHOOL ENROLLMENT
LOCAL TAXES
STATE AID
FEDERAL AID
SCHOOL DISTRICT REVENUES
COST OF EDUCATION

SOURCES: W. Hirsch, "Fiscal Impact of Industrialization on Local Schools," _Revue of Economics and Statistics,_ May 1964. Stanford Research Institute.

Correspondingly, the federally induced enrollment should include both direct and indirect enrollment. Thus, the full equation corresponding to equation (1) would be as follows:

$$(2) \quad F_e = (N_f + N_i) \frac{L_n}{N_n} - (L_f + L_i)$$

where the subscript f represents direct federal connection and the subscript i represents induced federal connection.

The determination of this equation is extremely complex, requiring full economic multiplier analysis, as well as careful delineation of all property classes. We believe, however, that the result of such an investigation would not be worth the effort. As with any activity, the induced activity creates additional school pupils, as well as additional assessed values, and there is no reason to expect that the ratio of assessed values to pupils will be different for the induced activities than for the other nonfederal activities in the area. Thus, equations (1a) and (2) will lead to essentially the same value of F_e.

This can be shown by rewriting equation (2) as follows:

$$F_e = \frac{N_f L_n}{N_n} + \frac{N_i L_n}{N_n} - L_i - L_f$$

Let

$$L_i / N_i = L_n / N_n ,$$

then

$$F_e = \frac{N_f L_n}{N_n} + L_i - L_i - L_f$$

or

$$F_e = N_f \frac{L_n}{N_n} - L_f$$

which is identical to equation (1a). Thus, if local revenues per pupil for the pupils indirectly associated with the federal activity are the same as local revenues per pupil for nonfederally connected pupils, then the equalizing value of federal payment is not changed by including the indirectly connected pupils with the nonfederally connected pupils. In other words, the stimulus to economic growth in an area that may be associated with a federal activity does not necessarily result in a favorable fiscal balance for the local school district.*

The assumption that the local revenues per pupil for pupils indirectly connected with federal impaction are the same as for nonfederally connected pupils is reasonable for most communities, since the indirectly connected pupils will be members of families employed in service types of industry, such as retail trade, personal services, financial services, local manufacturing (bakeries, machine shops), repair services, and local transportation, which constitute the bulk of employment for both those serving and those not serving the federal installation and its employees.

Only if there are substantial dynamic impacts, in which the federal facility generates a process of growth that becomes essentially unconnected with the federal activity, can we expect local revenue sources per pupil to rise. This will occur only if the growth process is accompanied by rising assessed values per acre and per pupil. Except in areas with relatively scarce land, much of the growth will take place by an expansion in land occupied for urban purposes, with modest increases in values per unit. Thus, only a small part of economic growth will be transformed into increased property values per parcel and per pupil.

The case study of Brevard County, Florida, gives evidence that economic growth does not necessarily provide an increased property tax base per pupil. Brevard County contains the Cape Kennedy Missile installations and is one of the fastest growing areas in the nation, yet between 1958 and 1964, assessed value increased 190%, while public school enrollment increased 280%, resulting in a decline in assessed value per pupil. (See Volume II.)

Further evidence that increases in assessed value are not necessarily accompanied by increases in assessed value per pupil is provided by Table 7 on assessed value trends in certain states. As the table shows, substantial increases in total assessed value are accompanied by negligible increases in assessed value per pupil in all states except California, but

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* In a study by SRI for NASA, it was found that unless a dynamic and essentially unrelated growth is generated in the area, the indirect and induced effects will be relatively small for most areas. This is true because, in most areas, the purchase requirements of the facility and its employees are met primarily by imports from other areas, resulting in only a small portion of the expenditures creating income in the local area. In a small metropolitan area the total income will only be 20 or 30% higher than the income directly generated by the federal facility.

Table 7

PERCENTAGE CHANGE IN ASSESSED VALUE IN SELECTED STATES
1959-1963

	% Change in Total Assessed Value	% Change in Assessed Value per Pupil
Maryland	19.4%	-0.6%
Illinois	11.5	-2.7
Ohio	15.7	2.7
Michigan	15.0	0.1
California	30.9	5.7
Wisconsin	19.1	-2.9
Pennsylvania	11.0	1.1
Missouri	11.9	0.1

Source: "Sources of Revenue for the Public Schools of the Great Cities, 1964," Research Council of the Great Cities Programs for School Improvement (mimeo), Chicago.

even in California, the five-year increase in assessed value per pupil was considerably less than the 23% increase in current expenses per pupil in the period.*

Special Considerations in the Computation of F_e

F_e is that federal payment that removes the burden on local school districts created by the federal activity. The intradistrict equalizing payments are determined by the conditions existing in the area. It is unreasonable to expect the federal government to project what the area would in fact be like if there were no federal impaction, or to project what the area's future would hold without the federal impaction. Rather, it is satisfactory if the federal government can make a payment that results in the federal connection's not distorting the resource-cost balance in the community as currently developed. It is entirely possible that without federal impaction the community would be very different, but it would require a considerable research project for each district to discover what "might have been."

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* U.S. average current expenditure per ADA, K-12, increased from $300.50 in 1958-59 to $433 in 1962-63. Estimates of School Statistics, 1964-65, National Education Association, Washington, D.C., p. 18.

If a community were entirely self-contained, and had only residential and business property, with all residents working at the local business enterprises, the problem of determining the proper allocation of local resources between federal and nonfederal pupils would involve only the determination of federal contribution directly made by the federally connected family as a resident. For most districts, however, two complications necessitate separate consideration: (1) the existence of farms and undeveloped land within the school district boundaries; and (2) the problem of commuting into and out of the district for work.

The handling of undeveloped land must be somewhat arbitrary, although it is clearly inappropriate to allocate all the value of undeveloped land to nonfederal pupils, for this would involve double counting; i.e., the local district would be receiving the values from the undeveloped lands and be paid again for them by the federal government. An alternative is suggested by the intent of the F_e calculation. Since a new nonfederal pupil moving into the area would reduce the per pupil allocation of the revenues from undeveloped land to the same extent as would a federal pupil, the revenues from these lands may be excluded from the calculation, or allocated on an ADA basis. In either procedure, the value of undeveloped land will not influence the calculation of F_e.

Farmlands are a combination of places of business, residences, and undeveloped lands. Rather than attempt a complex allocation, these, too, are eliminated from consideration.

Commuting is a problem only if there is either net in- or out-commuting. If the commuting is balanced, then the effect on school revenues and cost are the same as if there were no commuting. In this case, F_e can be calculated without regard to commuting. If there is net out-commuting, then disregarding commuting in the computation of F_e says that we adopt the existing pattern of commuting for local residents. In this case, the federal government is relieved of the obligation of payment for businesses to which the nonfederal employees commute. If 50% of local residents commute out on a net basis, then the federal obligation with regard to computation of F_e for 3(b)2 pupils is reduced by 50% of normal business values. On the other hand, accepting the existing ratio of residences and businesses in the community for determining federal payment has the effect of also accepting the proportions of in-commuting. If projection were our goal, this assumption means that we predict that there will be further business development in the district drawing on workers from outside. Since projection is not our goal, ignoring commuting patterns simply means that we accept the pattern developed both within the district and between the district and its neighbors. Without detailed research, this acceptance is necessary to have a common basis for payment.

As noted above, property taxes on undeveloped land and on farmlands should be apportioned on an ADA basis, or completely discounted, in computing LCR (local contribution rate) for federal payment. There appear to be other local revenues that are taken into account for payment under P.L. 874, not justified by the original intent of the law. These are local revenues derived from sources other than property taxes. The report from the Committee* contained the following:

> Section 3 covers the situation in which the Federal Government, by owning tax-exempt property on which children reside or on which their parents are employed has in effect imposed upon the school district the financial burden of educating these children while withholding from the district the opportunity to meet this burden by taxing the real property on which the children live or on which the parents are employed.

Thus it was not intended that Section 3 of P.L. 874 be used to compensate for lost revenues other than those derived from property taxes. Further, the argument that the presence of federal employees deprives the local educational agency of revenues from such items as sales taxes, licenses, sales of property, or other sources of income is much weaker than the argument related to property taxes. This is especially true of the 3(b) pupil, living in the community, making purchases in the community, etc. It is true that the community may derive less of such revenues if there is a military commissary from which military personnel purchase much of their consumer goods, thereby depriving local business of income and local government of sales tax revenues, but the extent of this deprivation is unknown and could only be computed through detailed surveys.

An additional argument against including nonproperty tax revenues in the computation of LCR is that much of this revenue is income-related, and thus partly dependent upon the income multiplier. It is therefore possible that for these sources the federal employees do contribute more to the area than their direct contribution.

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* House of Representatives, op. cit., p. 7.

The above discussion indicates that it is reasonable to eliminate nonproperty tax revenues from the LCR. On the other hand, compensatory payments to the state governments for property taxes might well be justified in terms of the original intent of the law.

On the average, independent school districts derive 86% of their revenues from the property tax. Most of the remainder derives from educational services, mostly school lunch sales (55% of the remainder),* tuitions, and sales of property. Table 8 shows the percent of revenues derived from the property tax for local support of schools by state. Only in 14 states do nonproperty tax revenues constitute more than 10% of total local revenue. In these states, local districts are receiving some bonus. Thus, in computing F_e, nonproperty revenues are eliminated.

A federally connected pupil is defined, for payment under Section 3, P.L. 874, as one who lives with a parent on federal property, or who lives with a parent who works on federal property. Where the parent who works on federal property is a secondary wage earner, and the primary wage earner works on nonfederal property, there is no justification for payment.+ Such a family is contributing to the tax base both from the place of residence and the place of work, and is adding no burden to the community. Thus, in calculating F_e, entitlement based upon a secondary wage earner should be eliminated. As shown by the case studies in Montgomery County, Maryland, and Salina, Kansas, secondary wage earners account for less than 5% of 3(b) entitlement.

Federal Payment and Interdistrict Equalization

The basic intent of P.L. 874 is to compensate for burdens imposed on school districts by a federal activity. It is not an express purpose of the law to promote equalization of revenues among districts. However, fiscal equity among governmental units is clearly an important goal of

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* Census of Government Compendium of Government Finance, 1962, Vol. IV, No. 4, Table 3, p. 28

+ A secondary wage earner may be defined as any wage earner in a family, other than the primary wage earner, where the primary wage earner is defined as being the head of the household.

Table 8

STATES RANKED IN DESCENDING ORDER BY PROPORTION OF LOCAL REVENUE FROM PROPERTY TAX
1960

Arkansas	100%	South Dakota	96%
Florida	100	Delaware	95
Georgia	100	New Hampshire	94
Illinois	100	West Virginia	94
Indiana	100	South Carolina	92
Iowa	100	Utah	92
Kansas	100	Nebraska	91
Massachusetts	100	Ohio	91
Michigan	100	New Mexico	90
Missouri	100	Maine	87
Texas	100	Wyoming	86
Virginia	100	Mississippi	85
Wisconsin	100	Washington	82
California	99	North Carolina	80
New Jersey	99	Pennsylvania	79
North Dakota	99	Maryland	78
Colorado	98	Kentucky	77
New York	98	Louisiana	77
Arizona	97	Rhode Island	75
Connecticut	97	Alabama	68
Idaho	97	Alaska	67
Minnesota	97	Oklahoma	64
Montana	97	Oregon	62
Nevada	97	Washington, D.C.	n.a.
Vermont	97	Hawaii	n.a.
		Tennessee	n.a.

Source: *U.S. Census of Governments, 1962*, Table 21, "Taxable Property Values," p. 101 *et seq*.

much federal legislation providing grants-in-aid; therefore an examination of the equalizing effects of payments under P.L. 874 is justified. In fact, as Labovitz points out,* certain aspects of the law demonstrate an implicit equalizing intent, even if the intent is not expressed as equalizing. These aspects relate to methods of determining the local contribution rate upon which payment is based.

The law, as currently amended, permits states to establish a limited number of groups (see Chapter 4), based on varying criteria, such as grade levels taught, with each entitled district receiving payment at a rate equal to the average local contributions of the districts in its group. The amendments of 1953 also established minimum rates equal to one-half the average education expenses in the state or the nation, whichever is higher. This also has an equalizing tendency, as it provides for payments at rates considerably higher than the district's local costs. (See Chapter 4, section on LCR.)

According to Labovitz, however, it was not to promote equalization that prompted Congress to interject the minimum rate options; rather, it was their intent to narrow the disparities in the rates of federal payment between states.† The minimum rates would be used to increase payments to districts in states with a high proportion of education expenses borne by the state.

The minimum rate option was intended to diverge from the basic intent of the law to relieve specific local burdens; however, it is a curious intent, in that it fails to conform to accepted concepts of equalization. "An equalization feature in a grant program is defined as one which gives recognition to the underlying differences in the capacity of the state and local governments to raise funds from tax and other fiscal resources available to them . . . "‡ Providing additional funds to districts simply because the state assumes a large role in public education does not reflect differences either among states or districts in ability to finance education.

For example, in New Mexico, the state government provides about 75% of state and local funds; in Massachusetts, the state government provides less than 18% of the funds. Therefore, in New Mexico, a district receiving federal funds at half the state costs per pupil receives from the state and federal government about 125% of the costs per pupil; in Massachusetts a district receives only 68% of the costs under the same circumstances.

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* Labovitz, op. cit., pp. 128-137.

† Ibid., p. 132.

‡ Advisory Commission on Intergovernmental Relations, The Role of Equalization in Federal Grants, Washington, D.C. January 1964, p. 4.

The procedure of switching from revenues to costs would appear to distort the income equalization inherent in the minimum rate provision. However, the information presented in Chapter 4 shows that the use of minimum rates does create some equalization tendency, since districts using the minimum rate option tend to have lower median family incomes than do districts using the comparable district option.

Chapter 4

QUANTITATIVE EVALUATION OF PAYMENTS UNDER P.L. 874

Relation of P.L. 874 Entitlements to the "Burden" on Local School Districts

The "burden" on local school districts has been defined for purposes of this study as being the current expenses of education incurred for federally connected pupils not met by the combination of normally available local and state resources. It is the intent of this chapter to determine if payments under P.L. 874 meet this "burden", and to evaluate the various aspects of the payment procedure under this law to determine their effectiveness in this connection. We have established in the preceding chapter that the internal burden may be said to be met when the federal payment provides revenue per federally connected pupil which, when combined with local revenues derived from the federally connected family, equals the local revenue available for each nonfederally connected pupil; i.e., $(F_e + L_f)/N_f = L_n/N_n$. A value of F_e has been calculated for each of 54 school districts in 18 states. (See Appendix D.) These districts are large countywide and city school districts with populations over 50,000; they do not comprise a random sample of all districts. They are all federally entitled school districts that are roughly coterminous with county and city governments for which taxable property data were available in the Census of Government, and which are included in the Office of Education Survey of 1960. These districts have enrollment ranging from 7,000 to over 200,000, whereas the average district in the United States has enrollment of about 1,000 pupils. Thus, conclusions for these districts do not necessarily hold for the vast number of smaller districts.

The main purpose of this section is to show the way in which entitlement has operated to meet the burden in these 54 districts. The local burden is assumed to be met if the actual entitlement is equal to the entitlement required for intradistrict equalization (F_e), as previously calculated. The measure of success is the ratio of the difference between 95% of entitlement and intradistrict equalizing entitlement, to total entitlement. This will be called the "burden ratio," calculated as follows:

$\frac{.95F - F_e}{F}$, where F is total net entitlement under P.L. 874, and F_e

is the intradistrict equalizing entitlement.

Five percent of actual entitlements are deducted to cover the estimated cost of acquiring the funds and administering the law. The theoretically appropriate value of this ratio is zero. A positive ratio indicates overpayment; a negative ratio, underpayment. Table 9 shows the frequency distribution of this ratio among the 54 districts. The arithmetic mean of the burden ratios for the 54 districts is only .04, which should indicate that the law is operating on the average to just cover the burden of federal connection. The table shows, however, that the law operates well in very few districts. The ratios range from -74% to +84%, with most districts far from the mean value, or the theoretically appropriate value of zero. No procedure to distribute funds can be said to operate in the expected manner, when the average for all districts is obtained by half the districts receiving large overpayments, the other half receiving large underpayments.

To evaluate the payment it is first necessary to dissect the payment procedure and relate each element to the burden ratio. The payment procedure under Section 3 of P.L. 874 is basically very simple, as follows:[*]

$$F = LCR\ (N_{3(a)} + \tfrac{1}{2}N_{3(b)}) - D;$$

where LCR is the local contribution rate for Section 3 payment, $N_{3(a)}$ is the number of pupils entitled under Section 3(a), and $N_{3(b)}$ is the number of pupils entitled under Section 3(b), (the 3(b) pupils are paid at one-half the rate of 3(a) pupils), and D is deductions from gross entitlement.

Thus, the determination of federal entitlement basically involves counting the number of pupils under each subsection and determining a local contribution rate.[†] Our method of calculating F_e assumes that the pupil count by subsection is correct.[‡] Thus, differences that may arise between F and F_e because of pupil count do not enter our calculations and are not further considered. The two factors that mainly account for the "burden ratio" differing from zero are:

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[*] For purposes of this section calculations will assume that all P.L. 874 payments are under Section 3. Since this is 94% correct on the average, the error introduced is small.

[†] Complexities do enter, especially with regard to commingled properties, leasing of government property, etc. These will be ignored in this evaluation.

[‡] The value of F_e is slightly overstated, because entitlement based on secondary wage earners could not be eliminated.

Table 9

DISTRIBUTION OF BURDEN RATIOS FOR 54 DISTRICTS
1960

Intervals	Number of Districts
-70.0 to -75.0	1
-65.0 to -69.9	0
-60.0 to -64.9	1
-55.0 to -59.9	1
-50.0 to -54.9	0
-45.0 to -49.9	1
-40.0 to -44.9	1
-35.0 to -39.9	2
-30.0 to -34.9	2
-25.0 to -29.9	0
-20.0 to -24.9	1
-15.0 to -19.9	1
-10.0 to -14.9	0
- 5.0 to - 9.9	2
0 to - 4.9	3
0 to 4.9	2
5.0 to 9.9	5
10.0 to 14.9	4
15.0 to 19.9	0
20.0 to 24.9	2
25.0 to 29.9	3
30.0 to 34.9	4
35.0 to 39.9	2
40.0 to 44.9	2
45.0 to 49.9	1
50.0 to 54.9	1
55.0 to 59.9	5
60.0 to 64.9	2
65.0 to 69.9	2
70.0 to 74.9	2
75.0 to 79.9	0
80.0 to 84.9	1
Total	54

Source: Appendix D, Col. 15.

1. The difference between the LCR used for payment under P.L. 874 and the actual local share of current expenses in the district.

2. The difference between the ratio of the 3(b) payment rate to the 3(a) payment rate of one-half used in the law, and the ratio that should be used in the district, based on the contribution of federally connected families to local revenues.

These two factors accounted for 83% of the variation in the burden ratios among the 54 districts, according to the results of the correlation analysis.* How divergences in the above measures relate to variation in the burden ratio are shown in Figures 2 and 3.

Figure 2 shows the relation between the burden ratio and the Section 3(b) payment ratio (PR). The payment ratio is the proportion of the 3(a) payment rate that should be paid to 3(b)2 pupils on the basis of the property types actually in the district. Since, in fact, 3(b)'s are paid at a rate of 50% of 3(a)'s, we should find a tendency for overpayment to exist when the real payment ratio is less than 50%, and an underpayment when the ratio is higher than 50%. We do find a tendency in this direction, as indicated by the trend line in the figure. It appears, however, that this trend is created by a small number of districts exhibiting extreme tendencies. The equation relating 3(b) payment ratio to the burden ratio is:

$$\frac{.95F - F_e}{F} = \underset{(.160)}{.618} - \underset{(.36)}{1.02}\,PR; \quad r = .37$$

In itself, the use of a 3(b) payment ratio that differs from the correct ratio accounts for only a small portion of the variation in "burden ratios" among districts; only 13%, according to the correlation analysis.

Figure 3 displays the relationship between overpayment and the difference by district between the local contribution rate for P.L. 874 payment and the actual local share of current expenses. The positive correlation is extremely high, with divergence in the rates accounting for

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* The F_e as calculated is gross rather than net entitlement, as deductions for in-lieu-of-tax payments have not been made.

FIGURE 2

CORRELATION OF BURDEN RATIO AND 3(B) PAYMENT RATIO FOR 54 DISTRICTS

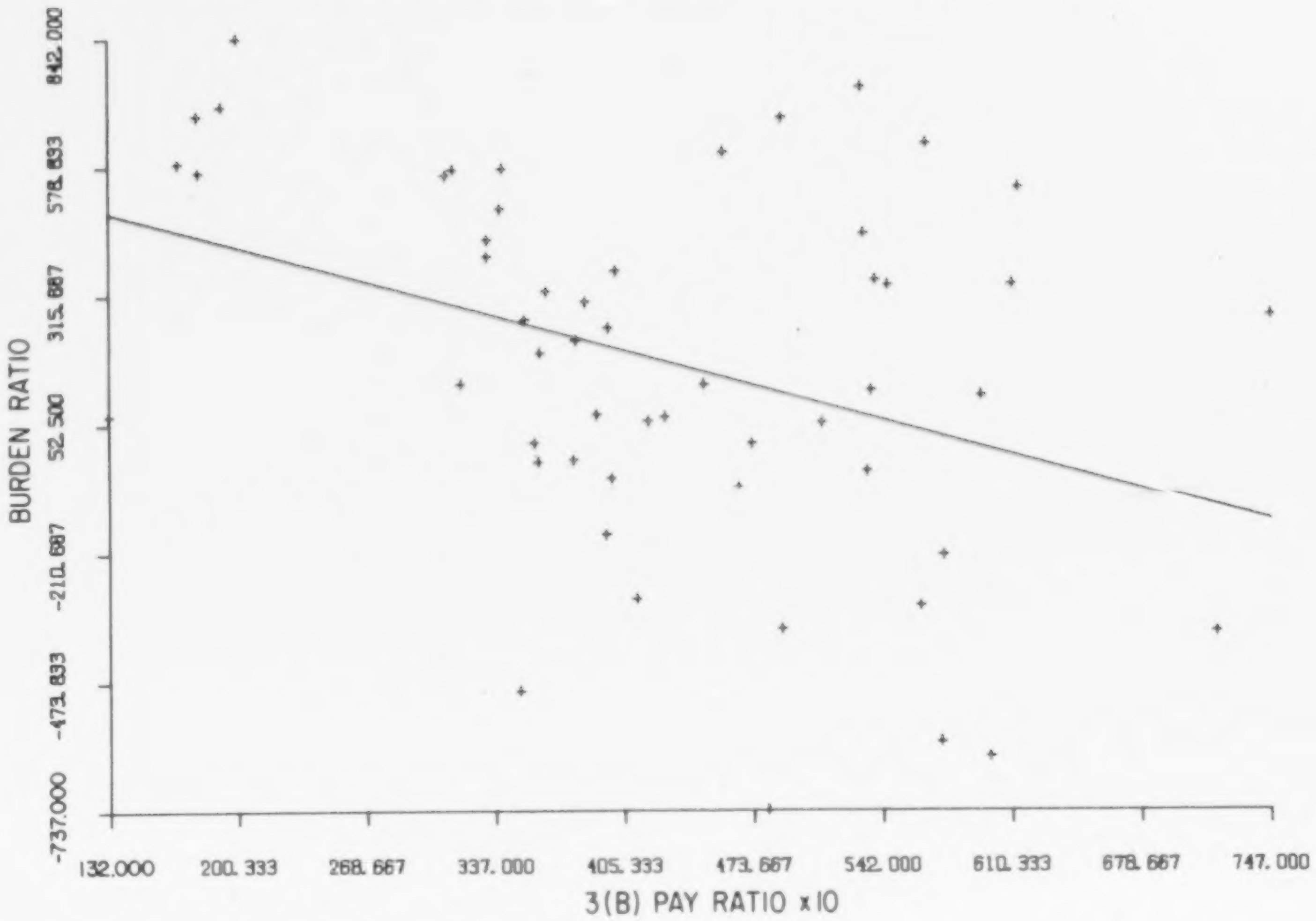
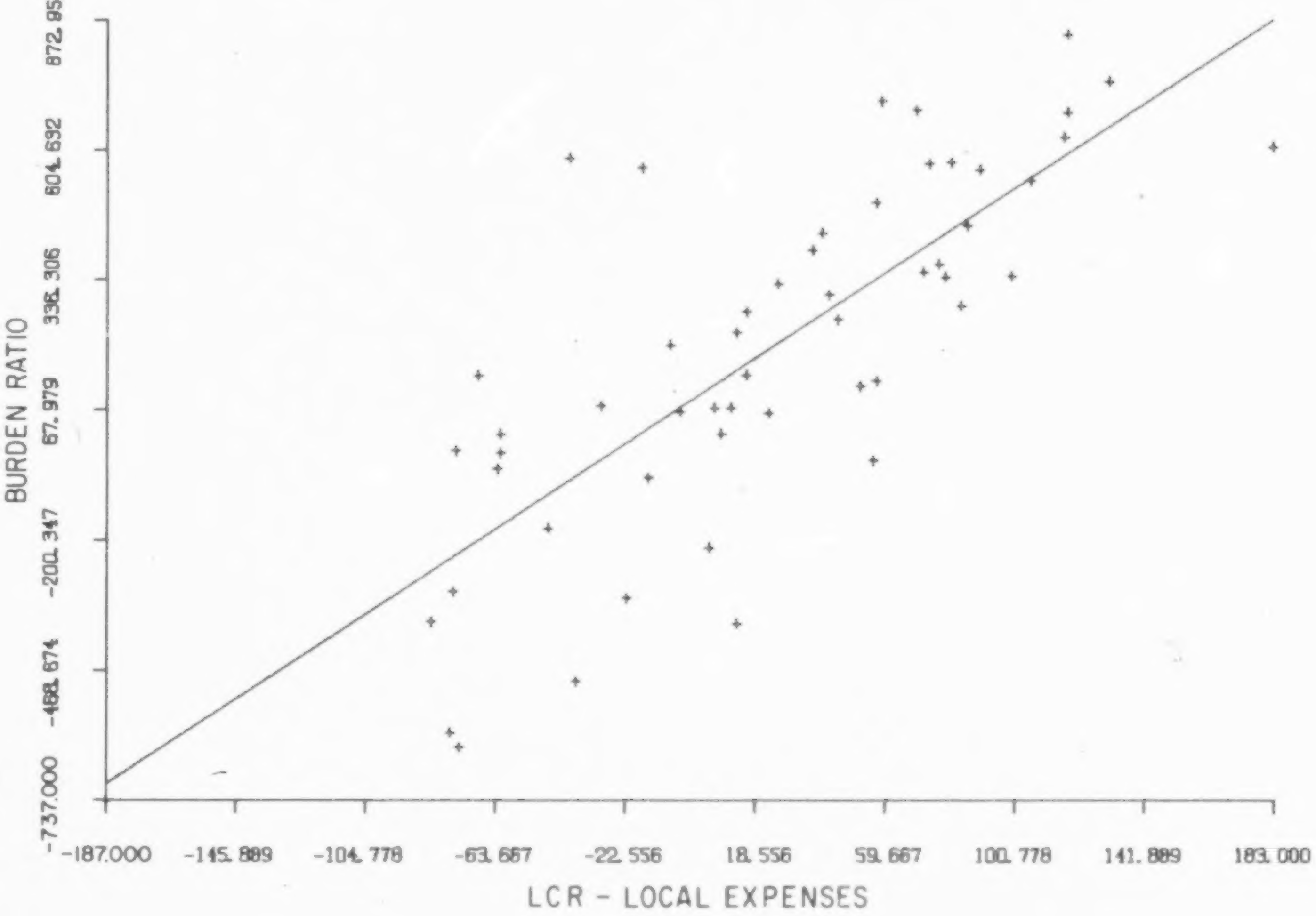


FIGURE 3

CORRELATION OF BURDEN RATIO AND LOCAL EXPENSE RESIDUAL
FOR 54 DISTRICTS



62% of the variation among district burden ratios. The equation is as follows:

$$\frac{.95F - F_e}{F} = \underset{(.033)}{.094} + \underset{(.00046)}{.00425}\ (LCR - L_n/N_n); \quad r = .79$$

It is quite clear from Figure 3 that the main reason for entitlements that differ from the "burden" imposed is the fact that the LCR for P.L. 874 payment differs drastically from the actual local share of education expenses in the district. It is interesting to note that the mean value of this differential is close to zero, which meets the basic intent of the law; this average figure, however, is representative of almost no single district, as can be seen in the frequency distribution of the differences in Table 10. The ways in which the LCR differs from district costs, and the explanations for it, are discussed in a later section of this chapter.

It may be concluded here that P.L. 874 operates so as to provide payments which, in individual districts, differ greatly from the payment needed to eliminate the "burden" as defined in this study. For most districts there are overpayments; for many, however, there are underpayments. Local contribution rates, which do not closely resemble local share of expenses, and a payment ratio for 3(b) pupils, which does not capture the wide variability that actually exists among districts in this ratio, account for the payment differing from the payment needed to create intra-district equalization; i.e., relieve the internal "burden."

Several district characteristics were correlated with the burden ratio to determine the situations under which there will tend to be over- or underpayment. The characteristics tested were: size of entitlement, proportion of federally connected ADA, median family income, current expenses of education per pupil, and assessed value per pupil. Meaningful relationships were found only for median family income and current expenses of education per pupil.

The burden ratio is negatively correlated with median family income. Each $100 of additional income is associated with a change in the opposite direction of about 1% in the burden ratio. (See Figure 4.) The relationship is not a particularly strong one, however, as indicated by a coefficient of correlation of only -.35; thus, only about 12% of the variation in the burden ratio is associated with differences among districts in median family income.

A much stronger relationship exists between the burden ratio and the current expenses of education per pupil (see Figure 5).

Table 10

DISTRIBUTION OF DIFFERENCES BETWEEN LCR AND LOCAL SHARE OF CURRENT EXPENSES FOR NONFEDERALLY CONNECTED PUPIL IN 54 DISTRICTS

1960

Intervals	Number of Districts
-190 to -180	1
- 90 to - 81	1
- 80 to - 71	3
- 70 to - 61	4
- 60 to - 51	0
- 50 to - 41	1
- 40 to - 31	2
- 30 to - 21	3
- 20 to - 11	2
- 10 to 0	2
0 to 9	3
10 to 19	5
20 to 29	2
30 to 39	1
40 to 49	3
50 to 59	5
60 to 69	0
70 to 79	5
80 to 89	3
90 to 99	1
100 to 109	2
110 to 119	3
120 to 129	0
130 to 139	1
140 to 149	0
150 to 159	0
160 to 169	0
170 to 179	0
180 to 189	1
190 to 199	0
Total	54

Source: Appendix D, Col. 19.

FIGURE 4

CORRELATION OF BURDEN RATIO AND MEDIAN FAMILY INCOME FOR 54 DISTRICTS

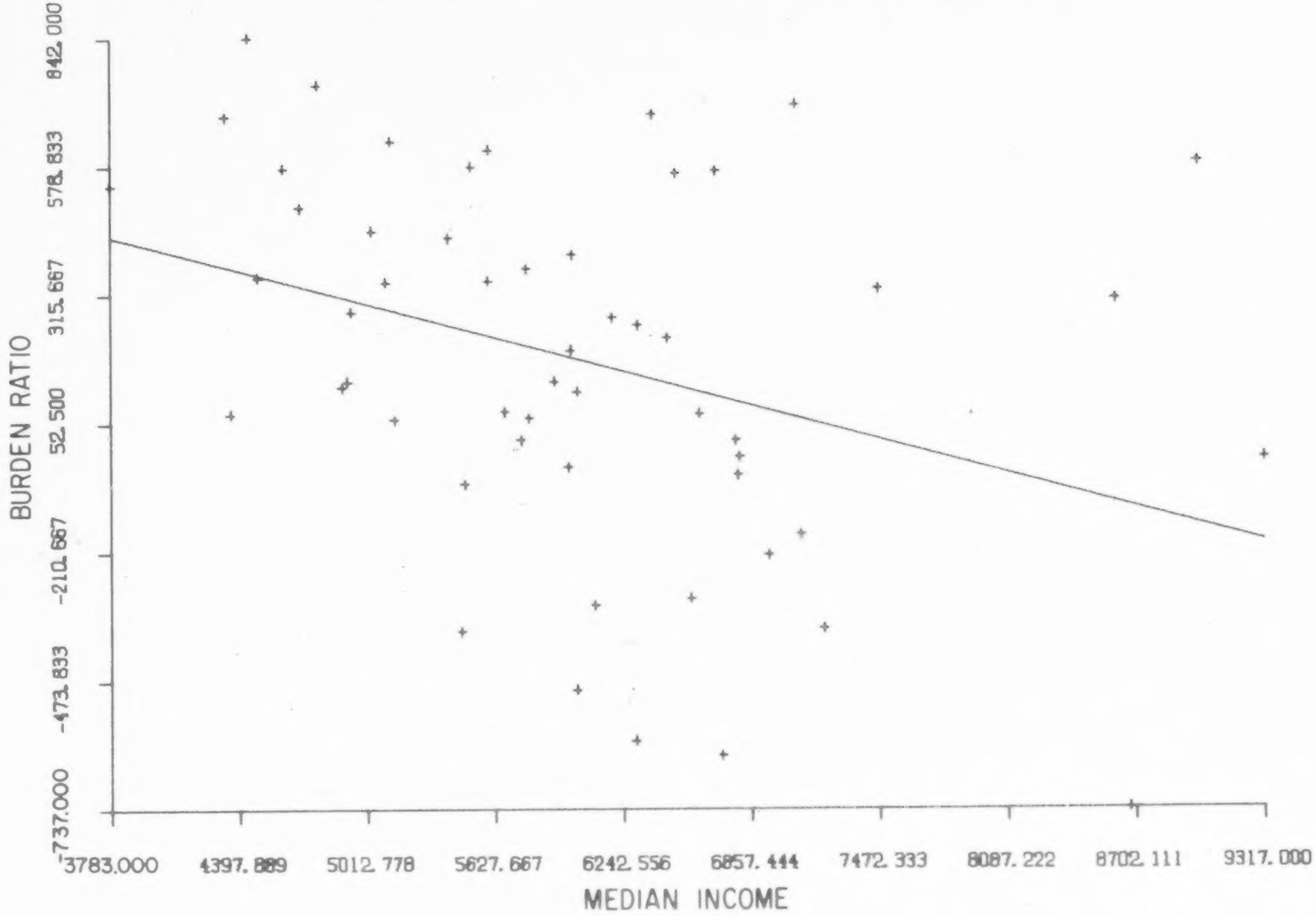
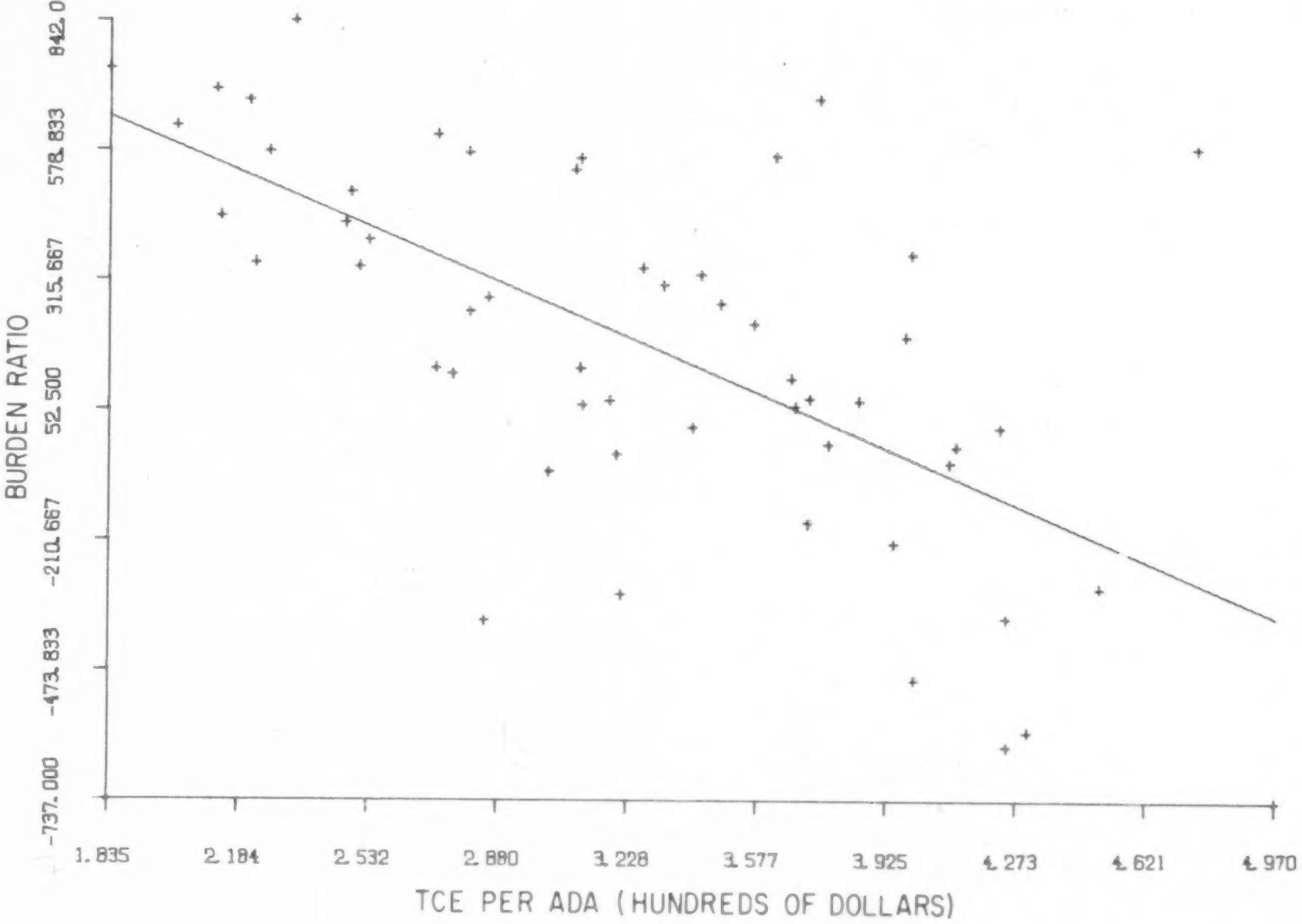


FIGURE 5

CORRELATION OF BURDEN RATIO AND EDUCATION EXPENSES PER PUPIL FOR 54 DISTRICTS



A $10 increase in current expenses of education per pupil is associated with a 3% decrease in the burden ratio. The relationship is a reasonably strong one, indicated by a coefficient of correlation of -.64 (i.e., 40% of the variation in the burden ratio is associated with variations in current expenses of education per pupil).

The implication of these two correlations is that an overpayment is somewhat likely to be associated with a low level of income, but even more likely to be associated with low current expenditures per pupil on education.

An estimate of the burden ratio was made for 44 states, for which data were available, as well as for the 54 districts. The ratios for the state are less reliable than the ratios calculated for the 54 districts, for they are based on total state data, which combine entitled and nonentitled districts. For the state ratios to be correct, it is necessary that the entitled districts be, on the average, similar to nonentitled districts, in terms of the sources of revenue and property types. Thus, the results of the national analysis must be interpreted with caution. The major difference between the findings for the individual districts and the nation was in the size of the average ratio. The average of the ratios for the 54 large districts was .04; whereas for the 44 states, the average was .26. If these ratios are accurate, they indicate that on the average there is substantial payment in excess of the burden, and that the greatest amount of overpayment goes to the vast number of middle size and small districts.

For both the districts and the states, it was found that the dispersion of results was very large, again indicating that the law is not operating so as to just meet the burden on a district-by-district basis. The relationships between the burden ratios and other characteristics for the states--the 3(b) payment ratio, median family income, current expenses of education--were similar to that found for the districts. Weak, but statistically significant, negative correlations were found for each of these variables. A positive correlation was found between overpayment and the proportion of state aid in total revenues.

In the following sections of this chapter, the major aspects of P.L. 874 that operate to effect the burden ratio will be discussed; these are--the options available to districts for selecting an LCR, the way in which the LCR conforms to the local share of current expenses, the 3(b) payment ratio, the location of facilities relative to the district receiving entitlement, and the eligibility requirements.

The Options for Determining the Local Contribution Rate (LCR)

One of the most important elements influencing the payments under P.L. 874 in any given year is the local contribution rate. The law provides that the LCR for a district be equal to that of the districts within the state judged to be "generally comparable" to the entitled district, as long as the rate so determined is not less than one-half the state or national average per pupil expenditures. There are currently two procedures for determining the LCR of "generally comparable" districts. Thirty-one states permit the local district to select those districts that are "generally comparable," with the list varying for each district. Nineteen states have established groupings of all districts within the state, with each district assigned by the state to a group and paid on the basis of the LCR of that group. In the former method, a district may elect not to select comparable districts and be paid at the appropriate minimum rate. In the latter method, the appropriate minimum rate will be assigned to any group that has an average LCR below this rate; each district in the group is paid at the minimum rate, regardless of its own costs of education. Thus, three major options for establishing a district's LCR are distinguishable: (1) local selection of comparable districts; (2) state selection of groups of comparable districts; and (3) minimum rates established at one-half the state or national expenses of education.

The second and third options were not included in the original legislation, but were added when the law was amended in 1953 by P.L. 83-248. The law was also amended to require only that "generally comparable" districts be selected for determining LCR. This change reveals the difficulties already faced in selecting comparable districts. No standard procedure has ever been adopted for the selection of comparable districts. Twelve guidelines were provided as criteria for selection. These were:

1. Legal classification
2. Total number of pupils in ADA
3. Cost per pupil in ADA
    a. Paid from local source funds only
    b. Paid from all source funds
4. Grade levels maintained
5. Percent of pupils transported
6. Pupil/teacher ratio
7. Assessed valuation per pupil in ADA
8. Ratio of assessed valuation to true valuation of property
9. Tax rate levied on real property for school purposes
    a. For current expenses only
    b. For current expenses, debt service, and capital outlay

10. Curricula offered
11. Teacher salary schedule
12. Economic characteristics, such as industrial, residential, or agricultural

It is clear that these are too general and too all-inclusive to serve as bases for selecting comparable districts--probably no two districts in a state would have the same values in all twelve criteria.

To avoid these difficulties it was established by SAFA* Bulletin 13 that LCR's could be determined by grouping districts in the state and applying the average LCR of the group. It was suggested that, in states having more than several applicants, all school districts in a state be grouped according to the following general procedure:

> "First: Classify into separate groups all school districts which are in the same legal classification and/or which operate under the same laws;
>
> "Second: If necessary subdivide these groups so that all school districts in a group operate the same grade levels;
>
> "Third: After the first and second steps are completed, a further subdivision may be necessary to avoid extreme ranges in size of the school districts within any one group; and
>
> " Fourth: A further subdivision may be necessary if differences in degree of urbanization and other factors materially affect the local contribution rate and current expenditures per pupil."

Bulletin 13 concluded with the hope that "local contribution rates established by this process can be used for most applicants and that only a relatively few unusual cases will require individual study."

While the procedures outlined in Bulletin 13 did not exclude the continued use of former procedures, the determination of group rates within each state was strongly suggested. Thus, groups were established as a substitute for individually determined local contribution rates, and this was apparently done not by the Commissioner with the consultation of state and local educational agencies as set forth in P.L. 874, but by the Office of Education field representatives and state educational agencies. The Commissioner later approved the group rates. Supplement 1 to Bulletin 13 amplified some of the aspects of the original bulletin and provided that (1) every district within a state (whether or not eligible for P.L. 874 funds) had to be in one group or another before group rates would receive approval by the Commissioner, and (2) applicant districts had to concur in the group rates recommended by the state educational agency.

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* SAFA--School Assistance in Federally Affected Areas.

Precisely how the concurrence of applicant districts in the use of group rates was to be obtained was not contained in Supplement 1 to Bulletin 13, but it became the policy of the U.S. Office of Education to assume concurrence unless a protest was lodged by a district. Without protest, therefore, group rates were accepted for use in a given state.

It is quite certain that many school districts failed to realize the importance of protesting against the use of a group rate at that time, especially since the entire P.L. 874 program was relatively new and districts were inexperienced in its operation. Probably even more important was the fact that neither Bulletin 13 nor its Supplement 1 was distributed to individual school districts, and it is extremely doubtful that they were fully acquainted with its contents.

In using group rates, all local funds derived by school districts in the groups are totaled and divided by their average daily attendance. The resulting rate becomes the local contribution rate for all eligible school districts two years hence. By grouping districts together, substantial disparities in local contribution to schools between districts are averaged. Especially since the 1953 amendment to P.L. 874, districts no longer have to be "most nearly comparable" but only "generally comparable." The result of this procedure is that districts with low LCR's (relative to the group average) receive greater amounts for the P.L. 874 program, and districts with high LCR's receive lesser amounts than they would under the original procedure.

At present, 19 states have group rate structures, but there is no uniformity in the procedures used by the states in establishing groups. Some states have a two-class dichotomy, such as city-county; other states have a multitude of classes; but five states each have only a single class. An attempt at categorizing the systems is presented in Table 11. This table shows that grade level, size of district, and legal class of district or city form the major bases for classification. Nine of the 19 states have either a single- or a two-class system; but the diversity among the districts in the other 10 states is less than indicated by the count of classes owing to the fact that several of the district classes have LCR's less than the minimum and thus all receive the same payment per pupil (3(a)). For example, Minnesota has eight classes, but since five of the classes are paid on the basis of one-half the state education

Table 11

CLASSIFICATION OF GROUP RATE CATEGORIES BY STATE
FY 1964

State	Grade Level	City Size or Class	School District Size	Rural-Urban	Other Classification	Number of Groups		
						Total	At $\bar{x}$ State Cost	At $\bar{x}$ National Cost
Arizona	X				X	5	2	
California	X					4	1	
Delaware						1	1	
Iowa	X			X		3		
Kansas	X	X	X	X		8		
Maryland		X				2		
Minnesota	X			X	X	8	5	
Missouri	X				X*	4		1
Nebraska		X				2		
Nevada						1	1	
New Jersey		X				3		
New Mexico						1		1
North Dakota						1		
Oregon	X		X			9		
South Dakota						1		
Texas			X			13		8
Utah					X†	2		2
Washington		X	X		X	6	4	
Wisconsin				X		2		

* Suburban groups separated.
† City-county dichotomy.

Source: U.S. Office of Education, *SAFA Rates (1963-64) Processing Policies and Procedures*. M & O-14.

expense, the number of different rates is reduced to four. In general, the group rate structures in combination with the provision for a minimum payment results in considerable equalization occurring within a state with regard to payments under P.L. 874.

The distribution of entitled districts by option employed is shown in Table 12. Approximately half the districts are in states using group rates, the other half are provided the option of using comparable districts or receiving payment at a rate of one-half the state or national costs. Of the districts provided with an option, half choose to receive payment at the minimum rate and half use comparable districts. This overall distribution disguises, however, a considerable polarization within states. Thus, in 19 of the 30 states permitting option, 90 to 100% of the districts elect either to receive payment at the minimum rate (this was the case in 14 states), or use comparable districts (this was the case in 5 states). In only 11 states is the existence of an option really meaningful.

On a national basis, districts that elect to receive payment on the basis of comparable district LCR are very different from those that elect to receive payment at half the state or national costs of education per pupil (Table 13). The differences are as would be expected. On the average, those selecting comparable districts have costs of education $89 higher than those paid at half the state or national average. Their local revenues per pupil are about $170 per pupil higher and their receipts from the state and federal government are $70 per pupil lower than the average for the others. Sixty-nine percent of their revenues are from local sources, whereas the districts paid at half the state or national average have only 37% of revenues from local sources. The median family income of comparable district electors is almost 50% higher, a difference of $2,200. All the other socioeconomic variables also reflect the same significant wealth differences between these two types of districts.

Part of the difference between districts reflects geography, as there is a heavy concentration of districts receiving payment at half the national costs in the South (Region 5) and a heavy concentration of districts selecting comparable districts in New England (Region 1). Data were adequate only for Regions 2 and 3 to test intraregional differences. In Region 2 especially, the same characteristics emerge, with average differences between the two kinds of districts in Region 2 as great as for the nation as a whole.

It may be concluded that the ability to elect half the state or national costs of education tends to help low income and high state aid districts.

Table 12

OPTIONS USED BY ENTITLED DISTRICTS
FY 1960

State	Group Rates		Minimum Rates		Comparable District LCR	Total Districts
	One Group	Two or More Groups	At State Cost	At National Cost		
Alabama	0	0	0	53	0	53
Alaska	0	0	19	0	1	20
Arizona	0	100	0	0	0	100
Arkansas	0	0	0	37	0	37
California	0	195	0	0	0	195
Colorado	0	0	6	0	66	72
Connecticut	0	0	2	0	43	45
Delaware	10	0	0	0	0	10
D.C. - Washington	0	0	0	0	0	0
Florida	0	0	0	18	0	18
Georgia	0	0	0	75	0	75
Hawaii	0	0	0	2	0	2
Idaho	0	0	0	5	30	35
Illinois	0	0	15	0	17	92
Indiana	0	0	0	70	29	99
Iowa	0	24	0	0	0	24
Kansas	0	180	0	0	0	180
Kentucky	0	0	0	41	5	46
Louisiana	0	0	0	9	0	9
Maine	0	0	0	29	42	71
Maryland	0	15	0	0	0	15
Massachusetts	0	0	0	0	155	155
Michigan	0	0	51	0	2	53
Minnesota	0	28	0	0	0	28
Mississippi	0	0	0	22*	0	22
Missouri	0	118	0	0	0	118
Montana	0	0	11	0	18	59
Nebraska	0	34	0	0	0	34
Nevada	11	0	0	0	0	11
New Hampshire	0	0	0	2	33	35
New Jersey	0	125	0	0	0	125
New Mexico	50	0	0	0	0	50
New York	0	0	79	0	82	161
North Carolina	0	0	0	33	0	33
North Dakota	29	0	0	0	0	29
Ohio	0	0	99	0	49	148
Oklahoma	0	0	0	99	221	320
Oregon	0	75	0	0	0	75
Pennsylvania	0	0	101	0	49	150
Rhode Island	0	0	0	0	21	21
South Carolina	0	0	0	33	0	33
South Dakota	58	0	0	0	0	58
Tennessee	0	0	0	45	0	45
Texas	0	246	0	0	0	246
Utah	12	0	0	0	0	12
Vermont	0	0	0	1	1	5
Virginia	0	0	0	33	12	45
Washington	0	185	0	0	0	185
West Virginia	0	0	0	5	0	5
Wisconsin	0	34	0	0	0	34
Wyoming	0	0	8	0	7	15
Total	170	1,659	421	590	946	3,808
As a Percent of Total	4.5%	43.6%	11.0%	16.1%	24.8%	100%

* State costs below one-half national cost.

Sources: U.S. Office of Education, SAFA application files. Stanford Research Institute.

Table 13

DIFFERENCES BETWEEN DISTRICTS USING MINIMUM RATE AND
THOSE USING COMPARABLE DISTRICT OPTION
IN FINANCIAL AND SOCIOECONOMIC CHARACTERISTICS*†

Characteristics	Region‡								All States§
	1	2	3	4	5	6	7	8	
1. TCE/ADA ($/ADA)	**	-85	-29	**	**	**	**	**	-89
2. Instruction costs/TCE (%)	↓		-3.4	↓	↓	↓	↓	↓	1.0
3. Transportation costs/TCE (%)	↓		4.0	↓	↓	↓	↓	↓	0.7
4. Elementary ADA/total ADA (%)	↓	6.9	-12.4	↓	↓	↓	↓	↓	
5. Elementary pupils per teacher	↓	1.8		↓	↓	↓	↓	↓	3.0
6. Secondary pupils per teacher	↓		1.4	↓	↓	↓	↓	↓	1.6
7. Local and intermediate revenue/ADA ($/ADA)	↓		-86	↓	↓	↓	↓	↓	-174
8. State and federal revenue/ADA ($/ADA)	↓	142	22	↓	↓	↓	↓	↓	70
9. Local and intermediate revenue/total revenue (%)	↓	-27.8	-9.7	↓	↓	↓	↓	↓	-31.9
10. Median family income (%)	↓	**		↓	↓	↓	↓	↓	-2,244
11. Population density (00's of persons per sq. mi.)	↓	↓		↓	↓	↓	↓	↓	-15
12. Percent in nonpublic schools (%)	↓	↓		↓	↓	↓	↓	↓	-11.9
13. Median years of education	↓	↓	-2.2	↓	↓	↓	↓	↓	-2.2
14. Percent in white-collar occupations (%)	↓	↓		↓	↓	↓	↓	↓	-10.4
15. Percent with incomes over $10,000 (%)	↓	↓		↓	↓	↓	↓	↓	-10.4
16. Percent of population under 18 (%)	↓	↓		↓	↓	↓	↓	↓	3.8
17. Percent of nonwhite residents (%)	↓	↓	-6.1	↓	↓	↓	↓	↓	16.7
18. Percent moved into school district in last 5 years (%)	↓	↓		↓	↓	↓	↓	↓	
19. Salary of beginning teacher ($)	↓	↓		↓	↓	↓	↓	↓	-793

* A positive number indicates districts using minimum rate option have larger mean value.

† A blank space shows that there are fewer than two chances in three that the means are drawn from different population, i.e., the standard deviation of the difference of the means is less than one.

‡ State composition of regions is shown in Table 1.

§ Region 9 omitted because of insufficient data.

** Insufficient data in sample.

Source: Appendix Table C-1.

The Local Contribution Rate and Intradistrict Equalization

Intradistrict equalization requires that the local contribution rate for payment under P.L. 874 be equal to the amount of current expenses of education covered by local revenues. The conditions for equalization are, in fact, more severe than implied by this definition, as will be explained later (i.e., consideration must be given to proportion of revenues from nonproperty tax sources, and from property taxes on raw land). At this point, however, we will concentrate on the relationship between the LCR and the actual expenditures from local revenue sources in a given year.

For a sample of approximately 1,000 entitled school districts (approximately 25% of the total) for the year 1959-60, it was possible to calculate the difference between the LCR and the proportion of current expenses of education (C) paid out of local revenue sources.* The result of this analysis for all states is contained in Table 14 and shown as frequency distribution in Figure 6. The results were analyzed for all districts combined and separately by major option category. Since the LCR for 1959-60 is based upon costs two years previously, we expect to find that local costs exceed the LCR by the change in the period. Costs have increased by an average of 10% each two years. The experience varies greatly, however, from state to state. (See Table 15.) In fact, the time lag does not result in local costs exceeding the LCR.

The analysis shows that for the median district in 1959-60, the LCR exceeded the per pupil local costs by approximately $40, despite the two-year time lag. The dispersion among districts was considerable, with 50% of the districts having payments that either fell short of costs by $10 or exceeded costs by $100.

The distribution shown in Figure 6 has three peaks, one at +$20, one at +$60, and one at +$120. These three peaks which correspond with the peaks in each of three subpopulations represent the distribution for districts using each of the three major options. Option 6 is the comparable district option, and it shows a relatively normal distribution with a peak only somewhat above zero. This indicates that on the average the comparable district option results in a payment rate equal to local costs, with a slight upward bias, probably reflecting the fact that a district will tend to select comparable districts in a way to help increase its own LCR.

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* This was determined by multiplying the current expenses of education per pupil by the ratio of local plus intermediate revenues to total revenues. This ratio includes revenues for current and capital expenses; thus some bias may enter.

Table 14

DISTRIBUTION OF DIFFERENCES BETWEEN LCR AND LOCAL SHARE OF EXPENSES BY OPTION, 1,057 DISTRICTS IN THE CONTINENTAL UNITED STATES 1960

Intervals LCR - L/N	Group Rates		Minimum Rates		Comparable District LCR	Total Districts
	One Group	Two or More Groups	At ½ State Cost	At ½ National Cost		
-209 to -200	4	6	0	1	2	13
-199 to -190	0	0	1	0	0	1
-189 to -180	1	2	0	0	1	4
-179 to -170	0	2	1	0	0	3
-169 to -160	0	0	0	0	1	1
-159 to -150	1	3	2	0	0	6
-149 to -140	0	3	0	0	0	3
-139 to -130	1	5	2	1	3	12
-129 to -120	1	2	1	0	2	6
-119 to -110	0	7	1	0	0	8
-109 to -100	2	4	3	0	1	10
-99 to -90	1	3	1	1	2	8
-89 to -80	1	4	1	0	4	10
-79 to -70	1	2	1	1	5	10
-69 to -60	1	9	2	1	11	24
-59 to -50	0	3	2	2	13	20
-49 to -40	2	9	0	4	9	24
-39 to -30	2	13	2	6	16	39
-29 to -20	1	14	1	5	18	39
-19 to -10	2	13	2	4	17	38
-9 to 0	0	14	2	4	20	40
1 to 10	2	20	6	2	20	50
11 to 20	1	15	4	7	25	52
21 to 30	4	9	4	10	27	54
31 to 40	3	15	4	5	15	42
41 to 50	3	19	8	10	14	54
51 to 60	2	17	7	8	13	47
61 to 70	5	24	2	17	7	55
71 to 80	5	20	1	10	11	47
81 to 90	4	18	0	19	8	49
91 to 100	4	17	1	17	5	44
101 to 110	7	9	2	19	3	40
111 to 120	0	14	4	31	7	56
121 to 130	1	5	1	29	1	37
131 to 140	3	4	2	31	4	44
141 to 150	1	7	4	18	0	30
151 to 160	2	2	2	4	2	12
161 to 170	0	1	1	0	2	4
171 to 180	2	0	1	0	1	4
181 to 190	1	1	0	0	0	2
191 to 200	0	1	0	0	1	2
201 to 210	3	4	3	0	3	13
Total	74	340	82	267	294	1,057

Sources: U.S. Office of Education, SAFA application files, and "Survey of School Finances," 1960. Stanford Research Institute.

FIGURE 6

DISTRIBUTION OF DIFFERENCES BETWEEN LCR AND LOCAL SHARE OF EXPENSES BY OPTION, FOR 1,057 DISTRICTS IN ALL STATES, 1960

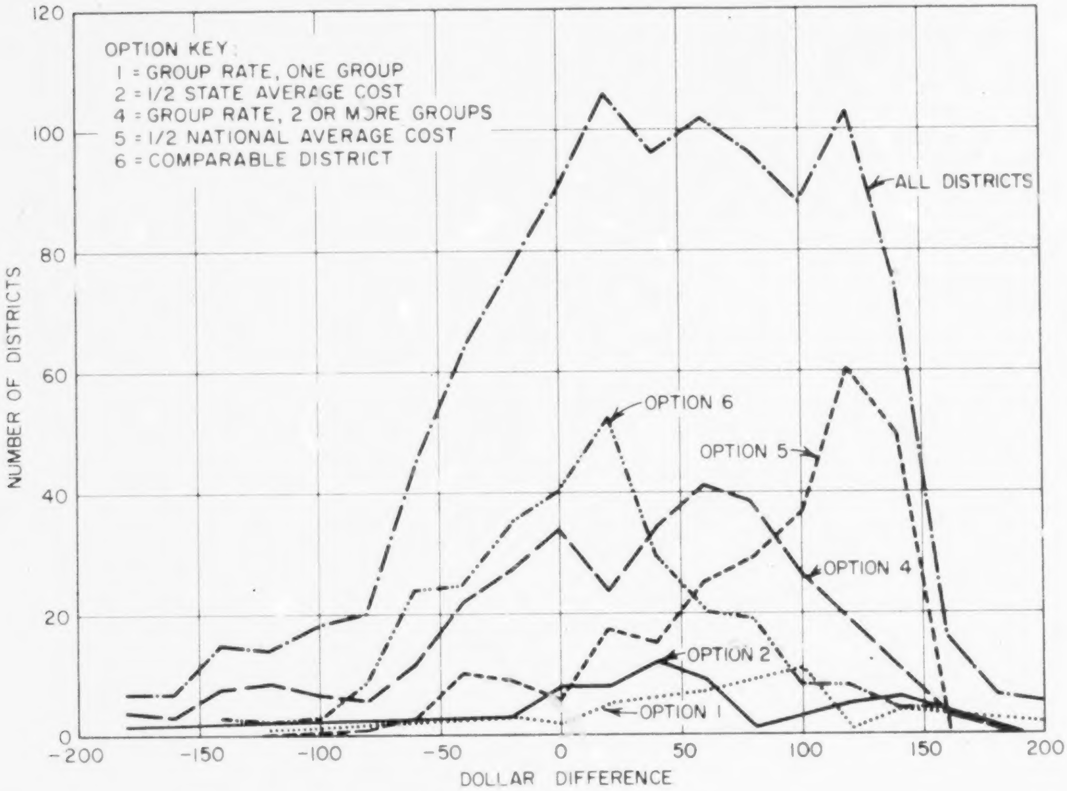

Table 15

PERCENT OF CHANGE IN PER PUPIL COST BY STATES, 1959-60 TO 1961-62, IN DECLINING ORDER FY 1960 to FY 1962

North Carolina	25.9%	New Hampshire	9.9%
Kentucky	25.0	Washington	9.9
Maine	19.1	Colorado	9.6
Wyoming	16.3	Vermont	9.5
Maryland	15.5	Florida	9.1
Missouri	15.0	Nebraska	9.1
Texas	14.6	North Dakota	8.0
Minnesota	14.4	Illinois	7.9
Georgia	13.8	South Carolina	7.8
Oregon	13.2	Oklahoma	7.6
Alaska	12.9	Pennsylvania	7.0
California	12.9	Idaho	6.8
New York*	12.7	Michigan	6.8
Tennessee	12.5	Connecticut	6.4
Wisconsin	12.3	Massachusetts	5.8
Nevada	12.2	Delaware	4.6
Kansas	12.0	Louisiana	4.1
New Mexico	12.0	Arkansas	4.0
West Virginia	11.7	Utah	2.1
Virginia	11.2	Montana	0.8
Mississippi	11.1	Ohio	0.5
South Dakota	10.8	Alabama	-2.9
Arizona	10.1	Iowa	-3.3
Hawaii	10.0	District of Columbia	n.a.
New Jersey	10.0		
Rhode Island	10.0		

* Source: For N.Y. 1959-60 figure: U.S. Office of Education Biennial Survey of Education in the United States, Chapter 2, "Statistics of State School Systems 1959-60," Table 48, p. 81.

Source: U.S. Office of Education, SAFA, Rates (1961-62) Processing Policies and Procedures, M&O-14.

The median district using this option has a difference of about +$20. Option 4 is the group rate option in states having more than a single group. The distribution for this group of districts has a subpeak at zero difference, and a model peak at +$60, with the median district having a difference of +$35. Again, the two peaks have a rational explanation. The first peak represents the tendencies in groups where the group rate is the true local costs of the districts in the group. However, there is a strong upward bias introduced by the fact that one-half the state or national costs may be substituted for the group rate, providing LCR in excess of local costs for all or most of the districts in the group.

Option 5 is one-half the national costs of education. This distribution is strongly skewed, with a model peak at $120. The median district using this option receives $100 per pupil more than its local costs. The strong upward bias in this group of districts is to be expected, since it is used mostly in southern states, with low costs per pupil and a relatively small share of costs borne by local revenue sources.

Distributions have also been made for 16 individual states for which we have adequate sample data. The results are shown on Table 16.

There are four southern states in the sample group--Alabama, Georgia, Tennessee, and Virginia. All four allow the comparable district option and use one-half the national costs as the minimum rate. The table shows the proportion of districts using each option, the proportion of costs borne by local revenues, and the median districts' excess of LCR over local costs.

Where the local agencies contribute significantly less than one-half the costs, and where costs tend to be low relative to the national average, it will be found that all, or almost all districts in the state will elect to receive payment at one-half the national average, and will receive payment at rates substantially above their actual local contributions. In Virignia, where costs are somewhat higher than in the other southern states, and where local sources of revenue constitute over 50% of the total, a reasonable proportion of districts elect to receive payment at comparable district rates, and the overall bonus payment is much smaller.

There are five northern states in the sample group which permit use of the comparable district option--Connecticut, Massachusetts, New York, and Ohio, which use one-half the state cost as the minimum rate, and Maine which uses one-half the national costs as the minimum rate.

Table 16

DIFFERENCE BETWEEN LOCAL CONTRIBUTION RATE AND LOCAL COSTS FOR A SAMPLE OF DISTRICTS IN SELECTED STATES FY 1960

State	State per Capita Costs 1957-58	Estimated Proportion Using Option		Local Share of Cost	Difference--Median District
		½ State or National Costs	Comparable District LCR		
Comparable district option					
Southern states					
Alabama	$172	100%*	0%	35%	$+125
Georgia	205	100*	0	36	+125
Tennessee	188	100*	0	42	+115
Virginia	228	65*	35	63	+45
Other states					
Connecticut	369	0	100	65	-20
Maine	245	20*	80	75	20
Massachusetts	332	0	100	80	-12
New York	503	50	50	60	30
Ohio	334	40	60	70	13
Oklahoma	263	25*	75	70	83
		Number of Groups			
		Total	½ State or National Costs		
Group rate states					
Arizona	358	5	2	65	3
California	373	4	1	60	34
New Jersey	410	3	0	75	-3
South Dakota	328	1	0	90	75
Texas	292	13	8*	50	68
Washington	360	6	4	40	63

* = ½ national cost; no asterisk designates ½ state cost.

Sources: U.S. Office of Education, SAFA application files; "Survey of School Finances, 1960; and *Rates (1961-62) Processing Policies and Procedures*, M&O-14. Stanford Research Institute.

In these states, the local government carries a much higher proportion of the burden than in the southern states, and as a result most of the districts in the area use the comparable district option and receive relatively small bonuses, if any. Only in one of the four states are the expenditures on education small enough to qualify for use of the one-half national cost option; but even here, the bonus is relatively small because of the high proportion of local costs. Thus, in Maine a district would have to have costs considerably below the national average to justify switching from comparable district to one-half the national costs.

The minimum cost option represents a far greater source of bonus (both in terms of the proportion of districts able to use the option and in terms of the dollars per pupil of bonus) to the southern than to the northern states, mainly because of the smaller proportion of costs provided out of local revenues in the southern states.

A state for which the data do not conform to the pattern noted above is Oklahoma. It is a comparable district state using one-half the national cost as minimum rate, and in which local revenues provide over 70% of total costs. Twenty-five percent of its districts are paid at the minimum rate. Both districts paid at minimum rates and those selecting comparable districts receive large bonuses, averaging over $80 per district for the median district using each option. The 1957-58 costs per pupil of $263 and the percent borne by local sources were similar to costs and proportions in Maine. There is no obvious explanation as to why Oklahoma districts appear to receive such large bonuses.

There are six states in the sample group that use group rates--Arizona, California, New Jersey, South Dakota, Texas, and Washington--with wide variations in differences among the states. Arizona and New Jersey are high cost states, with local revenues providing the bulk of funds. As a result, the groupings result in a netting out of the differences, with the median district receiving a rate that matches its actual local costs. The bonus in California results primarily from the fact that the elementary school districts receive payment at one-half the state cost, although their actual local costs are considerably below this figure. In 1959-60, one-half the state cost in California was $186, while the local share of current expenses for elementary districts was $136. These lower costs do not reflect lower fiscal ability, but simply the lower costs of providing elementary as against secondary education.

The large bonus to Texas districts results from the fact that most of the groups receive payment at one-half the national cost, while the LCR of their groups is much lower than this figure. The bonus to Washington districts reflects the fact that most of the groups receive payment at one-half the state cost, while the local districts generally bear considerably less than one-half the cost. It would appear that South Dakota is able to set a rate that provides bonuses to all districts in the state, the explanation for which is not clear from the data.

Overall, there is a wide range of differences between the LCR and actual local costs, implying that the median value for the differences disguises the fact that many districts receive much larger bonuses, while others receive none, and in many instances the LCR is less than necessary to cover local costs. Part of the large variance reflects the inaccuracy of the sample data, part reflects the fact that the local ratio contains both current and capital revenues. The data sources have been checked for many districts (especially in California and in the case study districts) and have been found to be substantially accurate. Much of the variance must reflect the fact that the method of determining the LCR does not result in a payment rate very close to the actual current costs of education provided from local revenues.

Twenty-five percent of the entitled districts, located in 19 states, have their local contribution rates determined on the basis of the rates of a selected list of comparable districts. These districts are selected by the recipient district with the approval of the state board of education. The use of a specific set of comparable districts should be expected to result in LCR's closely approximating the actual local shares of current expenses in the district. As shown in Table 14, however, there is a wide discrepancy between local contribution as paid under P.L. 874 and local share of expenses actually incurred in districts using the comparable district option. To help determine why these discrepancies exist, we examined several of the district application files. The findings for four districts can be used to show how discrepancies arise. Two districts, Newton, Massachusetts, and Arlington, Virginia, had underpayments; the other two districts, Columbus, Ohio, and Warwick, Rhode Island, received overpayments. The information for these four districts and their selected comparable districts for the year 1961-62 are shown in Table 17.

Newton, Massachusetts had a local contribution rate almost identical to the average for the five comparable districts. The underpayment for Newton represented the time lag of two years. The local contribution rate for the comparable districts was $433, whereas Newton's actual local contribution in 1961-62 was over $508; based on 1959-60 revenues and costs, it was $435. The five comparable districts had varied characteristics which, on the average, were not too dissimilar from those of the recipient district. The costs of education per pupil, the pupil/teacher ratio, and the grade levels taught were similar. However, the size range in ADA was smaller and the tax rates tended to be higher.

Table 17

COMPARABLE DISTRICT INFORMATION FOR FOUR ENTITLED DISTRICTS*
FY 1962

District	ADA	Current Expenses From Local Sources (thousands)	LCE	Legal Classification	Type of Community	Grade Levels	Pupil Teacher Ratio	Assessed Value as a % of True Value	School Tax Rate for Current Expenses Only (mills per $1.00)
Columbus, Ohio	73,537	$17,233	$231.61	City	Urban	K-12	29.0	50	15.91
Comparable Districts									
Akron	50,104	11,128	281.97	City	Urban	K-12	21.51	50	18.03
Cincinnati	71,057	23,517	330.78	City	Urban	K-12	26.59	50	13.83
Cleveland	122,814	36,262	295.26	City	Urban	K-12	27.69	51	12.60
Toledo	46,459	12,778	275.04	City	Urban	K-12	20.18	50	11.10
Youngstown	24,681	8,481	343.05	City	Urban	K-12	21.35	50	18.93
Aggregate	315,118	95,167	302.00						
Warwick, R.I	12,803	3,547	277.02	City	Suburban	1-12	21.0	80	0.02
Comparable Districts									
Barrington	2,988	1,003	335.61	Town	Suburban	K-12	18.4	75	0.02
Bristol	1,621	550	339.12	Town	Suburban	K-12	22.1	75	9.56
Coventry	2,393	784	327.42	Town	Suburban	1-12	22.5	65	0.02
Lincoln	2,038	626	307.34	Town	Rural	K-9	21.1	70	0.02
Pawtucket	9,272	2,908	313.69	City	Urban	K-12	25.1	67	9.75
Aggregate	18,312	5,871	320.60						
Newton, Mass	15,787	6,874	435.42	City	Urban	K-12	21.97	100	25.27
Comparable Districts									
Cambridge	9,862	4,241	429.98	City	Urban	K-12	20.72	100	17.81
Wellesley	4,801	2,192	456.67	Town	Urban	K-12	19.54	100	36.19
Wayland	2,166	842	388.71	Town	Suburban	K-12	20.02	100	38.99
Westwood	2,128	828	389.21	Town	Suburban	K-12	16.76	100	37.30
Weston	1,812	888	489.80	Town	Suburban	K-12	17.72	100	33.85
Aggregate	20,769	8,991	432.89						
Arlington Co. Va	22,021	6,780	307.85	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Comparable Districts									
Alexandria	12,630	3,396	268.90	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Falls Church	1,925	508	263.93	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Aggregate	14,555	3,904	268.24	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

* Cost data is for 1959-60

Source: U.S. Office of Education, SAFA, Form RSF-1 (1961-62), Tables 6 and 7

The underpayment for Arlington results simply from the fact that there appear to be no comparable districts in Virginia. Table 17 shows that only two districts appear on the list, both very different from Arlington in size and costs of education. The average LCR is $40 less than Arlington's. Two factors add to the underpayment: (1) the time lag, and (2) the fact that the LCR of the nonfederal sector is considerably higher than for the district as a whole, because of the large number of federally connected families. The total underpayment for Arlington is about $150 per 3(a) federal pupil.

Columbus, Ohio, receives a substantial overpayment by being able to use as comparable districts those that are similar in structure, but have consistently higher expenditures on education and local share of expenses per pupil. The $68 advantage in local contribution rate is reduced to about $50 by the added costs due to the time lag. It is probably true, however, that the districts selected would be part of any reasonably constructed group that would include Columbus. Thus, Columbus may always receive a bonus because of its low expenditures on education.

The basis for selecting the group of districts listed as comparable with Warwick, Rhode Island, is not evident. They represent different sizes and classes of district, different types of community, different grade levels, different assessment ratios, and different tax rates. The only characteristics they have in common is that they are all in Rhode Island, and have consistently higher expenditures on education and local contribution rates than Warwick. As a result, Warwick receives a bonus of $43 per federal pupil.

The Payment Ratio for Section 3(b) Pupils

P.L. 874 provides that a pupil who either lives on federal property, or whose parent works on federal property, receives payment at one-half the rate established for a pupil who meets both criteria for entitlement. The ratio of one-half is based upon the hypothesis that places of residence and places of work each contribute one-half of the property taxes paid to local school districts. It must be noted that the fifty-fifty split does not relate either to total revenues or to total property tax revenues, but to a portion of each. Thus, taxes derived from nonproperty sources are assumed to be available to all pupils in equal per pupil amounts, and do not enter the payment formula. The same is true of property taxes on lands that are not essentially residences or places of work. Using the statewide data for 1961, published in the Census of Government, an average value for the ratio of residential to place of work property values is 55/45, indicating a national average payment ratio for 3(b)1 pupils of .55, and for 3(b)2 pupils of .45. However, as Labovitz points out, the national average is not very meaningful for a law that is intended to meet the conditions existing in individual school districts.*

The distribution of payment ratios for the 54 districts is shown in Table 18. The conclusion to be reached from this table is that, even though the average payment ratio for all districts is .45, the application of such a ratio to all districts would result in most districts having a payment ratio applied that was either much too generous or much too niggardly.

The above finding suggests that each district should be paid on its own payment ratio, and that this ratio would differ widely among districts. The determination of a payment ratio for a district is far more complex than indicated by the ratio of residential to commercial property. The proper payment ratio is not one that represents simply the average ratio of residential to commercial property in the district; rather it is one that truly captures the contribution to local resources of federally connected families. The ratio of residential to commercial property accomplishes this task only if the federal families have housing which, on the average, is identical in value to housing of nonfederal families, have families that in size and age distribution are the same as nonfederal families, have the same tendency to send their children to public schools, and have working members in the same proportion as do nonfederal families. If these characteristics are different for federal and nonfederal families, then the payment ratio based only on the ratio of residential to commercial property needs to be adjusted.

Within the scope of this study, a thorough examination of these characteristics could be made only on a case study basis. It was made for the Salina, Kansas, school district. (See Volume II.) The procedures required to determine accurately the payment ratio in a district are complex, and they differ, depending upon the amount of data and data sources available in the community. A complete statement of the sampling procedure that may be followed is contained in Appendix A. The results in the Salina study indicate that such procedure is necessary, as there is evidence in Salina that housing values per family and public school pupils per family can be very different as between federally connected and nonfederally connected families. In the Salina study, it was found that the average value per residence for federal families was only 75% of that for nonfederal families, and that the number of public school pupils per residence

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* Labovitz, op. cit.

Table 18

3(b) PAYMENT RATIOS FOR 54 DISTRICTS FY 1960

Intervals	Number of Districts
0 to .049	0
.050 to .099	0
.100 to .149	1
.150 to .199	4
.200 to .249	1
.250 to .299	0
.300 to .349	7
.350 to .399	13
.400 to .449	5
.450 to .499	6
.500 to .549	7
.550 to .599	6
.600 to .649	2
.650 to .699	0
.700 to .749	2
.750 to .799	0
Total	54

Source: Appendix D, Col. 17.

was .67 for federal and .56 for nonfederal families. Adjusting the payment ratio that was derived simply in terms of residential and commercial property values, changed the payment ratio from .45 (based on residences being 55% of the total) to .67. The adjustments for differences in population characteristics result in a 50% increase in the 3(b) payment ratio for Salina, Kansas.

Salina is typical of a large number of entitled school districts, in that it derives its entitlement from a neighboring military base, namely Schilling Air Force Base. In 1962, the Office of Education reported that 80% of total entitlements are derived from military properties. Many of these are not military bases, however, and the exact proportion that would be like the Salina case is not known. The proportion is sufficiently large, however, to indicate that a large number of districts probably receive far less revenue from the federally connected families than is indicated by the ratio of residential to commercial property. That this is not nationally uniform, however, is shown by the Montgomery County study (Volume II), in which it was found that federally connected families probably have slightly higher average property values per household than do nonfederally connected families. In conclusion, it must be said that only individual district surveys will conclusively determine the proper 3(b) payment ratio to apply.

Even without the corrections on the payment ratio for differences in population characteristics, the proper payment ratio is only approximately equal to the ratio of commercial to residential property values. The proper payment ratio derives from the formula for the calculation of F_e.

The contribution to local revenues from federally connected families as given in the formula to calculate F_e is determined as follows:

$$L_f = L \left(\frac{V_r}{V} \right) \left(\frac{N_{3(b)}}{N_n + N_{3(b)}} \right)$$

where L is total local revenues from residential and commercial properties, V_r/V is the ratio of residential to residential plus commercial property values; and $N_{3(b)} / \left(N_n + N_{3(b)} \right)$ is the ratio of 3(b) ADA to the total ADA, less 3(a) ADA.

The proper payment ratio is given by the following formulation:

$$\text{Payment ratio} = 1 - \frac{L_f/N_{3(b)}}{L_n/N_n}$$

Letting R = the ratio of residential to total residential and commercial property values (V_r/V), and letting P = the ratio of 3(b) pupils to the sum of nonfederal and 3(b) pupils, the formula for the payment ratio reduces to the following:

$$\text{Payment Ratio} = 1 - R \left(\frac{1 - P}{1 - RP} \right)$$

If P is very small, the payment ratio will not differ greatly from 1 - R, as the ratio (1 - P) / (1 - RP) will approach unity. However, if P is large, i.e., there is a large proportion of federally connected 3(b) pupils in the school population, then this ratio will become significantly smaller than unity, and the payment ratio will rise above that of residential to total property values.

The Brevard County case study (Volume II) indicates the way in which this operates. In Brevard County, R is about $\frac{2}{3}$, and P is about $\frac{1}{2}$; thus, the payment ratio is as follows:

$$\text{Payment Ratio} = 1 - \frac{2}{3} \left(\frac{1 - \frac{1}{2}}{1 - \frac{2}{3} \cdot \frac{1}{2}} \right)$$

$$= 1 - \frac{2}{3} \times \frac{3}{4}$$

$$= \frac{1}{2}$$

Thus, with residential property representing two-thirds of the total in Brevard County, the proper payment ratio for 3(b) pupils is one-half, not one-third. That this is so, can be demonstrated by a simple example. A hypothetical district comprises two families, one federal and one nonfederal, each living in a house valued at $100. The nonfederal worker works on a piece of property valued at $100. Thus, the total assessed value of the district is $300, two-thirds of which is residential and one-third commercial. In this situation, the nonfederal family is contributing $200 to assessed value--one-half from their house and one-half from the place of work, while the federal family contributes only the $100 for the house. Thus, the federal family contributes one-half as much as the nonfederal family, requiring a payment ratio under P.L. 874 of one-half to create intradistrict equality. If no other correction is made to account for differences in population characteristics, it is at least necessary to correct the payment ratio for the relative importance of 3(b) families in the district population.

The Location of the Facility--Inside or Outside the Recipient District

As reported by the Office of Education in 1962, 57% of the 1,600,000 pupils entitled under Section 3(b) of P.L. 874 have their entitlement based on parents who work outside the district of residence. It has been claimed that such entitlement is not justified by the premise of P.L. 874. The basis for excluding the 3(b) "outs" is that the recipient district would receive no tax revenues from the places of business even if they were private, since they are not located inside the school district. The justification for exclusion rests on the acceptance of the "in-lieu-of-tax" principle as the basis for P.L. 874. As pointed out in Chapter 3, we have rejected this principle on the ground that it is both administratively unmanageable and inequitable.

If the criterion suggested in this study is applied, payment would be made for 3(b) "outs" only to the extent that out-commuting to work is atypical of the general pattern in the community. Thus, if all the non-federally connected workers out-commute, resulting in residences providing all the tax revenues, then the "burden" imposed by further out-commuting is nil (F_e is zero) and no payment should be made. However, if this is a community in which out-commuting is not typical, then places of work do typically contribute to the tax revenues, and out-commuting to federal jobs creates a "burden" and should be compensated. In other words, the justification problem is resolved by having the 3(b) payment ratio governed by the average ratio exising in each recipient district.

The characteristics of the school districts in which more than half the entitlement was based on facilities outside the school district were compared to those of school districts in which less than half the entitlement was so based. (See Table 19.)

Districts in our sample with a high percent of entitlement based on out-commuting tended to have the following characteristics:

1. Slightly higher instruction costs as a percent of total current expenses

2. Slightly higher pupil/teacher ratio

3. Considerably higher local and intermediate revenues per ADA

4. Considerably lower state and federal revenues per ADA

5. Considerably higher proportion of revenues from local sources

Table 19

DIFFERENCES BETWEEN DISTRICTS HAVING A MAJORITY OF "IN'S" AND THOSE HAVING A MAJORITY OF "OUT'S" IN FINANCIAL AND SOCIOECONOMIC CHARACTERISTICS*†

Characteristics	Region‡								All States§
	1	2	3	4	5	6	7	8	
1. TCE/ADA ($/ADA)			20	29	10		62	26	
2. Instruction costs/TCE (%)			1.7	-3.5			-4.0	-2.3	-0.7
3. Transportation costs/TCE (%)	-1.4		-1.8			-1.2	2.1	2.1	
4. Elementary ADA/total ADA (%)								5.9	
5. Elementary pupils per teacher	-1.3		-1.8	-2.5				-2.4	-.6
6. Secondary pupils per teacher		.9		-1.4			-2.7	-3.4	-.7
7. Local and intermediate revenue/ADA ($/ADA)	-46	-71			-14	-34		-31	-48
8. State and federal revenue/ADA ($/ADA)	34	34	30	72	33	36	106	43	56
9. Local and intermediate revenue/ADA (%)	-8.7	-10.9		-7.8	-4.9	-7.8	-12.5	-7.7	-11.2
10. Median family income ($)	**		**	**			**	**	-471
11. Population density (00's of persons per sq mi)	↓		↓	↓		7.8	↓	↓	-4.8
12. Percent in nonpublic schools (%)	↓		↓	↓			↓	↓	-2.4
13. Median years of education	↓		↓	↓			↓	↓	-.6
14. Percent in white-collar occupations	↓		↓	↓			↓	↓	
15. Percent with incomes over $10,000((%)	↓	-4.4	↓	↓			↓	↓	-2.5
16. Percent of population under 18 (%)	↓		↓	↓			↓	↓	1.3
17. Percent of nonwhite residents (%)	↓		↓	↓			↓	↓	4.4
18. Percent moved into school district in last 5 years (%)	↓		↓	↓	5.2	8.3	↓	↓	4.9
19. Salary of beginning teacher ($)	↓		↓	↓		-282	↓	↓	-138

* A positive number indicated districts having a majority of "IN's" have larger mean value.

† A blank space shows that there are fewer than two chances in three that the means are drawn from different population, i.e., the standard deviation of the difference of the means is less than one.

‡ State composition of regions is shown in Table 1.

§ Region 9 is omitted because of insufficient data.

** Insufficient data in sample.

Source: Appendix Table C-1.

6. Somewhat higher median family incomes

7. Considerably higher population density per square mile

8. Considerably higher percent of pupils in nonpublic schools

9. Somewhat higher median years of adult education

10. Somewhat higher proportion of families with incomes over $10,000

11. Slightly lower percent of population under 18 years

12. Considerably lower proportion of nonwhite residents

13. Considerably lower proportion of population moved into district in last five years

14. Slightly higher beginning teacher salaries

It would appear that districts with a large proportion of out-commuting are wealthier districts, with an older more stable population, than districts in which the facilities tend to locate. These districts, however, do not necessarily spend more on education. If the procedures suggested in this report with regard to payment ratios for 3(b) pupils are adopted, the districts with a large proportion of out-commuting entitlement would probably receive less entitlement than currently. The high local effort of these districts is indicative of a higher local tax base.

Some of the differences that appear as differences between districts owing to the location of facilities may in fact reflect other characteristics. A very important characteristic is regional distribution. The fact that districts with a higher proportion of "outs" are relatively more concentrated in the wealthier northeastern regions of the country may account for part of the income differential. (Note: Regions 1, 2, and 3 have approximately 30% of the entitled districts, and 40% of the districts with more than 50% "outs.") On the other hand, districts with a large proportion of out-commuting federal workers in Regions 3, 4, 5, 7, and 8 spend somewhat more on education than do districts in those regions with little out-commuting. These differences, however, do not test as being significant nationally. The strongest characteristic is state and federal funds per ADA. Districts with a high proportion of "ins" receive between $33 per pupil in Region 5 to $106 per pupil in Region 7 more than do districts with a high proportion of "outs." This would appear to indicate that districts with the federal facility inside the district have a lower tax base and thus receive more state aid. This reflects in lower local revenues per pupil in 5 of the 8 regions.

Entitlement under Section 4, P.L. 874*

Section 4 of P.L. 874 deals with burdens arising from "sudden and substantial increases in attendance." The major mechanism involved here is a special Section 4 contribution rate. To be eligible for Section 4 entitlement, a district must show that:

1. It has incurred an increase of federally connected pupils which amounts to at least 5% of its prior year's nonfederally connected enrollment. (Note that this test of eligibility becomes easier to meet as a district's proportion of federal to total pupils increases.)

2. Federal activity has placed upon it "a substantial and continuing financial burden."

3. It "is making a reasonable tax effort and is exercising due diligence"...but is "unable to secure sufficient funds to meet the increased educational costs involved."

A district may elect to count a given year's increase of federally connected pupils as either Section 4 or Section 3. In the following year, the prior year's federally connected pupils who were counted under Section 4 may again be counted under Section 4; however, such "second year" eligibility is paid at only one-half the Section 4 rate. A district may also elect to count second-year pupils under Section 3, but at no time may a pupil count toward more than one of these two sections of the law.

While Section 4 has been important to individual school districts, it has never been a major factor in the total national P.L. 874 experience. During the first five years of the law, assistance was given for increases encountered before enactment of the law (1950). Subsequent to 1955, eligibility has been determined substantially as shown above. In the past decade, Section 4 payments have been only a small fraction of total P.L. 874 payments; in 1963, they were less than 1%. Nevertheless, from time to time a given district may find that Section 4 is an important part of its federal assistance. In the case of Brevard County for example, its Section 4 entitlement constituted 40% of its total P.L. 874 funds in 1964; in turn, Brevard's Section 4 entitlement represented more than half the total national Section 4 entitlements for that year.

The intent of Section 4--to assist in the problems arising from "sudden and substantial increases in attendance"--is reasonably clear. Yet the nature, amount, and burden of these problems is elusive; certainly the law does not define how the second test of eligibility is to be determined. It may be inferred that in the early years of the law (1950-55), the purpose of Section 4 was to permit districts to solve problems arising from increases experienced prior to enactment of the law, in a way that Section 3 could not provide. Section 3's two-year time lag alone prevented P.L. 874 from giving complete cost coverage in a situation of rising school costs and enrollments; for some districts, the 50% rule for 3(b) students might have caused an additional disparity between actual costs and federal assistance.

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* by William N. Breswick

But in recent years, the form of the problem which Section 4 is intended to cover has become much less clear. It is necessary to inquire what exactly are the burdens that arise from a substantial increase in federally connected enrollment. In answering that question, one must be sure to exclude any burdens that Section 3 either addresses directly, or inherently declines to cover (i.e., was never intended to cover). Thus, if it is proposed that Section 4 accounts for the time-lag disparity between actual costs and assistance available under Section 3, it must be observed that the time-lag disparity is an inherent gap in Section 3. And if gap coverage is indeed the purpose of Section 4, then why not label it as such, for every district has been experiencing rising school costs, and every federally affected district has been encountering such a gap. Yet Section 4 specifically focuses on burdens arising from increasing federal enrollments.

An opportunity to examine the ramifications of Section 4 was available in the case study of Brevard County. Based on that examination (see Volume II), the following conclusions regarding Section 4 are offered:

1. The only burden that might be directly attributed to an increase of federally connected enrollment is a possible financing-cost burden--the cost of borrowing sufficient funds to cover the gap between actual school costs and Section 3 payments.

2. The real cost (not financing cost) burden represented by such a gap arises from an inherent feature of Section 3, and is not logically assignable to a federal enrollment increase.

3. Such burdens as might be attributed to enrollment increases are highly indeterminate. They may be shown to be part of the general problem of a local district in adjusting its school finances to account for the presence of a federal activity. As such, it is a problem of degree, not kind, and this may be said to apply even to financing costs.

4. The precision with which Section 4 entitlement rates are expressed is in marked contrast with the indeterminate nature of the burden which they are intended to cover, as the law is currently applied.

5. The general problem of rapidity of growth (in federal enrollment) per se does not appear to be a major problem in regard to federal activity. On the other hand, the general problem of rising school costs per pupil is indeed a major problem for virtually all school districts. But as presently written, P.L. 874 does not address this problem insofar as it concerns federally affected districts. Section 4 does bear upon the problem of rising costs, but it does so only indirectly; its intent and tests of eligibility focus upon an actually different problem, namely, the rapidity of growth in federal enrollment.

Eligibility Requirements for Entitlement under Section 3, P.L. 874*

In order to be eligible for P.L. 874 payments, a school district must have (1) at least 10 federally connected pupils in average daily attendance and (2) they must represent at least 3% of the total ADA in the district. However, Section 3(c)(3) of P.L. 874 requires that large school districts must demonstrate substantially greater federal inpact to be eligible for P.L. 874 payments. Specifically, districts in which ADA was 35,000 or more as of a specified date are required to show that at least 6% of their ADA were federally connected pupils. Originally, ADA was based on the fiscal year ending June 30, 1939, subsequently the law was amended to the fiscal year ending June 30, 1957, with the proviso that the new date would not apply to those districts that had established eligibility under the 3% rule but had subsequently grown to exceed 35,000 pupils in ADA.

In exceptional circumstances (i.e., circumstances that would make the application of the 3% requirement inequitable and would defeat the purposes of the law), the Commissioner may waive the 3% rule. He may not, however, waive the 6% requirement for large school districts.

Eligibility and Absorption

The basic requirements for eligibility--the 10 ADA minimum and 3% rule--were based on the premise that every school district should be able to absorb small numbers of federally connected pupils without hardship. In addition, the establishment of these minimum requirements avoided the tremendous and costly administrative burden of paying small amounts of money to thousands of school districts throughout the country.

For the large school districts, one of the basic provisions of P.L. 874 as it was originally enacted required qualifying districts with more than 35,000 ADA to absorb the first 3% of their federally connected students; P.L. 874 payments to these districts were made only on the basis of the numbers of federally connected students in excess of 3% in the school district. This provision, however, was eliminated from the law by the 1958 amendment that shifted the base year for large districts from FY 1939 to FY 1957.

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* By Keith E. Duke.

For both small and large districts, the concept of absorption seems to have been an important concept underlying eligibility requirements. The differing requirements for large and small districts were also based on beliefs in their differing abilities to absorb federally connected students without hardship. (See, also, subsequent section on justification for the 6% rule.) However, except for the large districts prior to FY 1958, the absorption concept has been applied only to nonqualifying districts. All nonqualifying districts must absorb up to 3% of their ADA (large districts, as defined in the law, up to 6%) without payment, while qualifying districts are paid for all federally connected students. This situation creates two important lines of discontinuity--one between those districts with slightly less than 3% federally connected ADA that receive no P.L. 874 funds and those districts with slightly more than 3% federally connected ADA that receive funds for all eligible pupils; and the other (and more important) between those large districts with slightly less than 6% federally connected ADA that receive no funds and those large districts with slightly more than 6% federally connected ADA that receive P.L. 874 funds for all (at least 2,100) eligible pupils. A more equitable program would be to require all districts--eligible or noneligible, large or small--to absorb the same percentage of federal students before federal payments were made.

An absorption requirement based on a certain percentage of all federally connected pupils would, however, still allow some inequities to remain since the burden placed on a given school district is clearly different for 3(a) and 3(b) pupils. The district that had to absorb the same percentage of 3(a) pupils as another district with only 3(b) pupils would clearly be placed under a heavier burden. Moreover, because some 3(a) pupils do not live on tax exempt properties (i.e., pupils with a parent on active duty with one of the uniformed services--the Public Health Services and Coast and Geodedic Survey as well as the Armed Services (Army, Navy, Air Force, Marine Corps, and Coast Guard) the distinction between 3(a) and 3(b) pupils in terms of burden placed on the local agency is not always a valid one. The most equitable solution would be to maintain an absorption requirement, rather than an eligibility requirement, that would weight federally connected students differentially based on their share of the burden placed on the local educational agency.

This finding does not imply that the present 3% eligibility requirement is optimal. In fact, if the absorption principle is adopted and if 3(b) pupils are not counted as full pupils, then retaining the 3% requirement would substantially reduce the entitlements to a majority of districts.

Justification for the 6% Rule

The 6% rule seems to have been inserted first into the construction bill (which became P.L. 815) as a means of bringing into harmony two differing versions of that bill. In the construction bill passed by the Senate in 1949, construction grants were to be "proportionate to the federal responsibility," and no mention was made of the size of the school districts. However, the House version excluded from benefits any school district that had an ADA of 35,000 or more in FY 1950 on the basis that:

> ". . . in these very large communities, on the whole, the federal activity did not constitute so great a proportion of the community's total activities as to present a special problem of absorption and that, moreover, these large communities have generally been able to realize corresponding benefits from the increased business activity resulting from federal activity, something that smaller communities have not generally been able to do."*

In working out a compromise that would be acceptable to both Houses, some of the larger districts were put on the same basis as the smaller ones by shifting the size test to a prewar date (FY 1939); the 6% rule was then inserted as a means of allowing large districts some construction aid but requiring them to meet more stringent rules of eligibility. Then, having incorporated these distinctions into the construction program (P.L. 815) the Senate-House conferees inserted similar provisions in the current-expense legislation (P.L. 874), even though neither the Senate nor the House version of this bill had originally included such a distinction between large and small districts.† The 6% provision in P.L. 874 made the two laws comparable in their treatment of the large districts, but it seems clear that the distinction made between large and small districts was on the basis of their presumed abilities to absorb new students, and not on the basis of their abilities to pay for current costs of educating federally connected pupils.

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* 81st Congress, 1st Session, House Report 2810, 96 Congressional Record, Part 10, 13046.

† Labovitz, op. cit., p. 39.

Another reason for the distinction between large and small districts in P.L. 874 was a practical one. It was realized that the program would be costly, and a practical means of limiting necessary appropriations was to place additional restrictions on the large districts which would receive substantial entitlements if they could qualify.*

Practical reasons, moreover, have undoubtedly been among those for retaining the 6% provision in spite of continued hearings and re-examination of various provisions of P.L. 874 over the past 15 years. In July 1964, the U.S. Commissioner of Education estimated that reducing the 6% requirement to 5% would result in an approximate $5 million increase in the cost of the program. The increased cost of further reducing the figure to 3% was not estimated, but might be several million dollars more.

The other major justification for continuing the distinction between large and small districts is the belief that the large cities were wealthier and could more ably assume the costs incident to providing free education than could smaller school districts. Other possible justifications might be that demands for educational services were relatively smaller in large cities than in other districts, that costs were lower, or that major economies of scale could be realized in the larger districts that were not possible in the smaller districts. These will be examined, briefly, in subsequent paragraphs.

Identification of Large Districts Falling under the 6% Rule

As of FY 1963 there were 86 "large" districts (e.g., had an ADA of 35,000 or more), but only about half of these (41) were "large" according to the P.L. 874 definition of the term. Thirty-eight districts fell under the 6% rule because their ADA exceeded 35,000 in FY 1939; three others fell under the rule because their ADA exceeded 35,000 in FY 1957 and they had not been able to qualify for P.L. 874 entitlement prior to FY 1958.

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* See, for example, 88th Congress, 2nd Session, Broadening School Assistance to Federally Affected Areas, Hearings before the Select Subcommittee on Education and Labor on H.R. 10159, July 27-29, 1964, p. 9.

It is questionable whether the threshold of 35,000 ADA sufficiently distinguishes between large and small districts, especially a threshold of 35,000 based on a prewar date. It will be noted from the table that many of the districts that had less than the designated 35,000 ADA in FY 1939 now exceed this threshold by a considerable margin and are actually much larger in terms of present ADA than some of the original large 6% districts. However, in order to analyze the 6% rule, the P.L. 874 distinctions between large and small districts have to be used. In subsequent paragraphs of this section, large districts are those that fall under the 6% rule, no matter what their present ADA.

Financial Abilities of Large Districts

There is no one single measure of financial ability that can be applied equitably to all school districts. Since most of the local revenues for the financial support of schools is derived from property taxes, however, the valuation of taxable properties is a major indicator of ability. Table 20 shows the total value of taxable properties (as determined locally and by the U.S. Bureau of the Census) and assessed valuation of these properties relative to ADA in those school districts falling under the 6% rule. In essentially every instance, valuation per ADA is substantially higher than the average for the state in which the district is located. However, there are also many instances of other districts within the state having higher valuations, some of them with more than 35,000 ADA but not considered large for the purposes of P.L. 874.* The property valuation per ADA in most large school districts is also declining relative to the valuation per ADA in the states in which they are located.

In addition to generally higher assessed valuations per ADA, many large school districts also derive higher percentages of their local revenues from sources other than taxes on real and personal properties than do other school districts in the same state. Many of the largest, however--including Boston, Chicago, Cleveland, Detroit, Los Angeles, New York City, and San Francisco--derive 99% or more of their local revenues from property taxes.

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* Assessed valuation usually represents a higher percentage of total value in large cities than in other areas, partially because of differences in assessment practices, partially because of the number and ages of properties to be assessed and other factors. However, the rate of true (or market) value at which properties are assessed is frequently greatly overstated. Compare first two columns in Table 20.

Table 20

FULL VALUATION AND ASSESSED VALUATION PER ADA IN DISTRICTS UNDER THE 6 PERCENT RULE FY 1960

District	Full Value per ADA (local)	Full Value per ADA (census)	Assessed Value per ADA
Birmingham, Ala.	$67,100	$67,100	$16,300
Los Angeles, Calif.	45,900	54,400	11,100
Oakland, Calif.	44,900	62,700	11,300
San Francisco, Calif.	67,000	139,800	16,500
Denver, Colo.	46,500	53,000	15,000
Dade Co., Fla.	29,100	32,400	13,700
Atlanta, Ga.	30,500	69,300	12,300
Hawaii	19,900	27,100	13,900
Chicago, Ill.	57,200	72,500	25,700
Indianapolis, Ind.	40,600	43,200	9,200
Des Moines, Iowa	26,900	26,300	5,700
Louisville, Ky.	39,100	42,800	13,500
Orleans Parish, La.	47,600	48,600	12,100
Baltimore, Md.	33,600	31,700	21,100
Boston, Mass.	28,500	54,000	18,700
Detroit, Mich.	39,400	46,000	19,700
Minneapolis, Minn.	48,500	64,500	6,500
St. Paul, Minn.	59,200	73,000	6,600
Kansas City, Mo.	52,500	51,200	13,400
St. Louis, Mo.	53,700	54,300	19,300
Newark, N.J.	25,400	27,100	12,100
Buffalo, N.Y.	36,600	67,100	18,300
New York City, N.Y.	35,200	61,200	29,000
Rochester, N.Y.	40,400	47,000	18,600
Akron, Ohio	45,800	47,300	16,600
Cincinnati, Ohio	63,200	59,900	25,900
Cleveland, Ohio	58,800	69,300	24,500
Columbus, Ohio	47,400	46,100	17,300
Toledo, Ohio	53,200	53,200	20,400
Portland, Ore.	32,100	40,500	12,900
Philadelphia, Pa.	27,000	32,000	18,500
Pittsburgh, Pa.	35,200	54,000	19,300
Providence, R.I.	58,000	53,900	38,700
Memphis, Tenn.	17,600	20,300	8,800
Dallas, Texas	46,400	46,400	20,900
Houston, Texas	45,800	45,800	14,700
Salt Lake City, Utah	28,300	46,900	7,100
Seattle, Wash.	60,100	67,600	9,400
Milwaukee, Wis.	42,900	46,500	22,500

Source: H. Thomas James, unpublished data.

Many factors, in addition to local revenues from other sources, tend to reduce the desirability of using property valuation as an effective index to a school district's financial ability. Chief among these are: (1) the differential demands of other local governmental units upon the same tax base, (2) restrictions on a district's access to local revenue (derived from the property tax base or elsewhere), and (3) differential access to revenues from other than local sources. For the large cities falling under the 6% eligibility requirement for P.L. 874 funds, all three of these factors tend to reduce their abilities relative to other districts.

Demands by municipal and other local government agencies are generally higher in large cities than in suburban or other areas and this tends to reduce the amount of funds available to school districts from taxes on real and personal property.* For example, a recent study of school financing in Pennsylvania found that only 30% of local funds raised from taxation in Philadelphia and Pittsburgh went to the school districts of these two large cities, whereas 70% of the local funds in suburban first class townships went to the public schools of these areas. Because of this, the effective property value per pupil available for school taxes in large cities was considerably below that of suburban areas, even though market values of properties were higher in the large cities. (See Table 21.)

Access to local revenue from property and other taxes is usually more restrictive in large city districts than in others, and in many states, a completely separate body of laws applies only to large school districts--frequently the one or two largest in the state. In 9 of the 14 largest city school districts,† for example, restrictions on tax levies are more severe than those applicable to smaller districts within the state. In some cities, local school boards have virtually no authority to control school revenues, and any increase in property taxes requires approval by the state legislature. In contrast, local school boards in smaller districts within the same states have much greater latitude in raising revenue without action by state legislatures.

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* Necessary expenditures for health and welfare services, public safety and traffic control, street maintenance, parks and playgrounds, museums and libraries, and other municipal services are generally much higher in large cities than in other areas.

† Boston, Buffalo, Chicago, Houston, Milwaukee, New York City, Philadelphia, Pittsburgh, and St. Louis.

Table 21

FISCAL DATA FOR PENNSYLVANIA SCHOOL DISTRICT OPERATIONS
FY 1962

	Median Market Value, Taxable Real Property per Pupil (K-12)	School District Tax As Percent of Total Municipal Tax	Effective Property Available for School Tax per Pupil	Median State Subsidy per Pupil (less capital)
Urban, excl. Philadelphia, Pittsburgh, and Scranton	$18,089	51%	$ 9,225.39	$151
Suburban boroughs	15,287	61	9,325.07	162
Rural boroughs	10,448	59	6,164.32	200
Suburban first class townships	18,156	70	12,709.20	150
Rural first class townships	12,135	66	8,009.10	188
Suburban second class townships	12,197	71	8,659.87	210
Rural second class townships	7,730	73	5,642.90	256
Coal region districts	14,522	61	8,858.42	210
Philadelphia	23,331	30	6,999.30	139
Pittsburgh	28,911	30	8,673.30	90
Scranton	15,610	39	6,067.90	159

Source: University of Pennsylvania, Fels Institute of Local and State Government, Special Education and Fiscal Requirements of Urban School Districts in Pennsylvania, 1964.

A much smaller share of total revenues in large districts is derived from nonlocal sources than is the case in smaller districts. During FY 1960, the districts falling under the 6% rule derived 71% of their total revenues from local funds. In comparison, a sample of over 5,000 other school districts with a total ADA of 16.4 million pupils, derived 59% of their total revenues from local sources. State aid programs in most states return a smaller share to large districts than to small districts; the 6% requirement in P.L. 874 also restricts the share of federal funds paid to large districts.

Costs of Education in Large School Districts

Table 22 shows several measures of educational costs for a sample of more than 5,000 small districts (including those with more than 35,000 ADA but which do not fall under the 6% rule) and all large districts for the FY 1960. Except for transportation expenses (which are often reimbursed with state aid funds), expenditures were 20-40% higher in large districts in every category of comparison. Table 23 also shows total expenditures and expenditures from local sources per classroom unit for most of the large districts compared with state averages (excluding the large districts) for the states in which these districts are located. Substantially greater expenditures by the large districts are apparent. The financial abilities of these large districts are, therefore, considerably restricted, in comparison with smaller districts, because of differential costs of education.

Demands for Education in Large Districts

Demands on large districts for educational services might be considered in two parts: (1) total demand, which is related to the number of pupils that must be educated at public expense, and (2) differential demand, which is related to the type of pupils that must be educated.

Table 24 lists the average daily membership (ADM) of 14 of the largest city school districts for FY's 1950 and 1963. From these data it is evident that increasing demands in terms of numbers of pupils to be educated are being placed on the large districts; all of the districts listed in the table increased in ADM during this 13-year period during which 11 of the 14 suffered population declines.

As of 1960, in the large districts, a smaller proportion of the total population was of school age (5-18 years); about the same porportion of school age children was enrolled in school, but a significantly smaller

Table 22

SELECTED EXPENDITURES, LARGE AND SMALL DISTRICTS
FY 1960

Expenditure	All Large Districts (6% rule)	Sample of 5,000 Other Districts	Large Districts as Percent of Small Districts
Instruction costs/ADA	$ 298.01	$ 247.97	120.6%
Transportation costs/ADA	3.49	11.80	29.6
Total cost/ADA	409.86	330.07	124.2
Average Salary			
Elementary teachers	5,573.44	4,040.70	137.9
Secondary teachers	6,039.22	4,433.20	136.2
Total cost/classroom unit	9,953.98	7,492.27	132.9

Sources: U.S. Office of Education, Statistics of Local Public School Systems for the School Year 1959-1960. Stanford Research Institute.

Table 23

TOTAL EXPENDITURES AND EXPENDITURES FROM LOCAL SOURCES PER CLASSROOM UNIT IN SELECTED STATES AND LARGE DISTRICTS FY 1960

District	District Expenditures			State	State Expenditures*		
	Total	Local	Local As a % of Total		Total	Local	Local As a % of Total
Birmingham	$ 5,530	$ 2,272	41%	Alabama	$ 4,169	$1,042	25%
Los Angeles	9,692	6,678	69	California†	9,177	5,347	58
Oakland	11,440	7,930	69				
San Francisco	10,818	7,559	70				
Denver	10,491	9,384	89	Colorado	8,033	5,630	70
Washington, D.C.	10,643	9,297	87	District of Columbia	10,643	9,297	87
Atlanta	6,671	4,670	70	Georgia	4,566	1,336	29
Chicago	10,974	8,570	78	Illinois	7,994	6,446	81
Indianapolis	9,465	9,305	98	Indiana	7,041	5,142	73
Louisville	7,148	5,104	71	Kentucky	3,839	1,864	49
New Orleans	8,202	3,438	42	Louisiana	7,126	2,052	29
Baltimore	9,364	6,714	72	Maryland	7,865	4,621	59
Boston	9,890	8,979	91	Massachusetts	7,966	6,764	85
Detroit	10,587	6,934	65	Michigan	7,819	4,543	58
Minneapolis	11,058	8,184	74	Minnesota	7,692	4,489	58
St. Paul	10,525	7,395	70				
Kansas City	10,153	7,867	77	Missouri	6,071	3,867	64
St. Louis	9,647	7,072	73				
Newark	11,114	9,318	84	New Jersey	9,594	7,553	79
Buffalo	11,421	7,186	63	New York	11,221	5,888	52
New York City	12,215	8,458	69				
Rochester	14,000	10,343	74				
Cincinnati	10,483	8,509	81	Ohio	6,703	4,899	73
Cleveland	9,747	7,882	81				
Columbus	8,275	6,390	77				
Toledo	9,637	7,600	79				
Portland	10,444	7,908	76	Oregon	8,686	6,124	70
Philadelphia	9,662	6,393	66	Pennsylvania	7,749	4,261	55
Pittsburgh	9,876	7,641	77				
Memphis	5,521	3,017	55	Tennessee	4,413	1,583	36
Dallas	6,855	4,485	65	Texas‡	6,282	2,939	47
Houston	7,194	4,576	64				
Seattle	9,390	5,013	53	Washington	8,138	2,970	36
Milwaukee	9,596	8,342	87	Wisconsin	7,857	6,199	79
Hawaii	7,393	1,350	18	Hawaii	7,393	1,350	18

* Data for states exclude cities listed.

† Data for Long Beach and San Diego also excluded from state figures.

‡ Data for Fort Worth and San Antonio also excluded from state figures.

Source: F. W. Harrison and E. P. McLoone, unpublished tabulation, April 22, 1965.

Table 24

PUBLIC SCHOOL MEMBERSHIP OF FOURTEEN SELECTED LARGE CITY SCHOOL DISTRICTS 1950 and 1963*

City	1950	1963	Percent Increase 1950-63
Baltimore	118,087	185,498	57%
Boston	91,577	94,578	3
Buffalo	65,565	73,228	12
Chicago	336,377	536,163	46
Cleveland	99,686	150,474	51
Detroit	232,230	294,527	27
Houston	95,757	205,155	114
Los Angeles	310,550	589,517†	90†
Milwaukee	69,163	115,819	68
New York City	879,315	1,046,523	19
Philadelphia	216,610	271,370	25
Pittsburgh	69,189	77,531	12
St. Louis	87,600	112,365	28
Washington, D.C.	93,631	137,718	47
Total 14 cities	2,765,337	3,890,466	49

† Increase is partially the result of annexations and school district consolidations.

* As of approximately October 1.

Source: Research Council of the Great Cities Program for School Improvement.

proportion was enrolled in public schools compared with the national average.* Particularly significant are the lesser numbers of children enrolled in public schools; large parochial school enrollment (mostly Catholic) is primarily responsible for the reduced demand for educational services in the public schools of most of the large cities of the United States. These data would indicate that somewhat lesser demands are placed on school districts in large cities in terms of pupils per capita relative to the rest of the country.

However, while demands in terms of pupils per capita are somewhat smaller in large cities, the differential demands in terms of the type of pupil to be educated are significantly larger. A recent study of scores on achievement tests of sixth grade pupils in Pennsylvania revealed startlingly significant differences between the large cities and other areas within the state (Table 25).

Table 25

PERCENT OF SIXTH GRADE PUPILS IN PENNSYLVANIA ACHIEVING
ONE-HALF GRADE LEVEL OR MORE BELOW ESTABLISHED NORMS
1963

School Districts	Percent of State ADM	Percent in Low Achieving Group	Percent of Total Low Achievers in State
Philadelphia	12.2%	40.7%	40.3%
19 cities (incl. Phila.)	25.2	36.6	65.8
Suburban districts	49.0	2.0	8.0
Rural districts	25.8	12.4	26.2

Source: Fels Institute of Local and State Government, Special Education and Fiscal Requirements of Urban School Districts in Pennsylvania, 1964.

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* Census of Population, 1960.

In the schools of the 19 cities were 25% of the ADM but 66% of the low achieving pupils; suburban school districts had 49% of the ADM but only 8% of the low achieving pupils. In Philadelphia, the percentage of low achievers was more than three times the city's percentage of state ADM.

Increasingly, low achievement pupils (through their parents, local, and national citizens groups, and other interested agencies, including the federal government) are making increased demands on the schools which result in broadened programs and increased expenditures. Foremost among these programs most of which have been developed during the past ten years, i.e., since the inauguration of school aid to federally affected areas) are the "compensatory" educational programs designed to compensate for students' deficiencies by providing extra remedial teachers, reducing class sizes, introducing pre-kindergarten classes, and providing additional guidance services, teacher aides, special teaching equipment, and improved school facilities for low achieving students. The greatest demands for such programs are in the large urban school districts, and many have responded by instituting a variety of programs, many of them requiring substantial expenditures. Few state aid programs reimburse districts for the additional per pupil costs associated with compensatory educational services.*

A second major area in which large cities experience increased demands for educational services, compared with other school districts, is vocational and technical education. Most large cities have a disproportionately high percentage of students enrolled in vocational, trade, and technical schools compared with other school districts in their states. (Table 26.) During FY 1963, the average cost of educating a student in an academic high school in selected major cities was $544.97, but the average cost of educating a student in a trade or vocational school was $737.00. This 35% cost differential, rarely taken into account in state aid formulas, represents a significant differential expense to large city school districts to meet educational demands that are not experienced to the same degree by other school districts.

A third area of additional educational demands placed on many of the large city school districts results from the significantly larger percentages in these cities of foreign-born and linguistic minority peoples

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* Several federal assistance programs are beginning to supplement local effort in this area: e.g., War on Poverty, Vocational Education, Manpower Retraining programs. In the future, assistance through the Elementary and Secondary Education Act of 1965 will be of great significance.

Table 26

TOTAL ENROLLMENT AND ENROLLMENT IN VOCATIONAL, TRADE, AND TECHNICAL SCHOOLS, SELECTED LARGE CITIES
FY 1963

City	Total Enrollment		Vocational, Trade and Technical Schools	
	K-12	Percent of State	Enrollment	Percent of State
Baltimore	180,032	26.9%	3,254	100.0%
Boston*	94,578	10.3	3,258	22.2
Buffalo	71,837	2.4	5,786	10.3
Chicago†	423,518	26.1	21,866	58.9
Cleveland	144,047	6.9	3,154	61.9
Detroit	292,104	16.3	6,805	96.4
Houston	185,639	8.4	--	--
Los Angeles	577,092	15.4	--	--
Milwaukee*	115,819	14.8	--	--
New York City	1,027,426	34.9	40,223	71.6
Philadelphia	264,290	12.2	5,692	11.5
Pittsburgh	76,094	3.5	2,681	5.4
St. Louis	108,059	12.1	3,345	67.6
San Francisco	94,162	2.5	--	--

* FY 1964

† FY 1962

Source: Research Council of the Great Cities Program for School Improvement who require comparatively greater educational services. Citizenship and English classes for adults are provided by most large city school districts, and special classes for public school pupils are required where language difficulties exist. The New York City public schools face unusually difficult demands because of their almost 100,000 pupils who do not speak English well enough to learn their school subjects through classes taught in English. For these pupils, English must be taught as a second language while attempting to help students progress as far as possible in their other subjects. Some ethnic minority groups also resist formal education in the schools in an effort to preserve particular traditions and language; and special programs for these groups are sometimes required.

While the differential costs of these programs resulting from increased demands in large city school districts are difficult to compare with those of other school districts, they undoubtedly reach substantial sums in many large cities. The demands on large districts in terms of the type of educational services needed, then, helps to balance somewhat lessened demands due to smaller percentages of total students in the public schools.

Evidence of Economies of Scale

Higher eligibility requirements or absorption rates for large school districts could be justified if there were evidence of substantial economies of scale for such districts. Economies of scale would exist if large school districts were able to provide at lower cost the same services per pupil as smaller districts. However, no such scale economies have been adequately demonstrated.

A recent study of previous investigations of the relationship between district size and unit costs concluded that:

> ". . . the theoretical construct of economy of scale finds consistent confirmation only among the very smallest districts. In those studies that included larger school systems and municipalities, only one found supporting evidence of a size-cost relationship through a larger segment of the size continuum."*

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* Nels W. Hanson, Economy of Scale in Education: An Analysis of the Relationship Between District Size and Unit Costs in the Public Schools, Dissertation, School of Education, Stanford University (mimeo), June 1963, p. 29.

The same investigator then conducted his own study of economies of scale in ten states using multiple regression analysis of school district size and unit-cost residuals.* Conclusions were then tentatively drawn that economies of scale did exist in those states, with optimum size school districts ranging from 20,000 ADA in Nebraska to 160,000 ADA in New York.† These conclusions were based upon correlation coefficients which were so low and standard errors which were so high that the conclusions drawn are not merited by the analysis.‡ Thus, on the basis of available evidence, it must be concluded that there is no substantiated evidence of economies of scale except among the very smallest districts (below 300 ADA).

Financial Ability of Large Districts vs Small Districts

From the available data it must be concluded that while the assessable tax base is generally higher in large school districts than in others, competing demands on local resources, relatively smaller revenues from nonlocal sources, higher costs, and increasing demands for more expensive programs substantially modify the abilities of large districts to educate federally connected pupils. It would seem, therefore, that retention of the differential percentage requirement (6% vs 3%) to establish entitlement under the P.L. 874 program is not justified. A more equitable method of differentiating between school districts, if desired, would be to develop a better measure of financial ability (based on an analysis of the factors treated in this section) and apply it to all school districts. The present distinction between large and small districts, based on a prewar measure of ADA (with slight modifications by the 1958 amendments) does not equitably separate those districts with abilities to absorb or educate greater numbers (or percentage) of federally connected pupils from those with abilities to absorb and educate lesser numbers.

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* Unit-cost residuals are the variations in cost per pupil that remain after deducting the effects of socioeconomic characteristics of the population and assessed value per capita.

† Ibid., pp. 50-52.

‡ Ibid., Table 2, p. 44.

Chapter 5

INFLUENCE OF FEDERAL CONNECTION ON LOCAL EFFORT

Introduction

Of considerable importance in the evaluation of P.L. 874 is the determination of how the federal activity has affected local effort to provide education. Expenditures on education are the most available measure of effort, though qualitative evidence with regard to the nature of the educational program, etc., are also involved. The analysis in Chapters 3 and 4 show that the federal activity does create a burden on the local school district. This contention has been primarily supported in Chapter 4 by reference to data at a single point in time. More dramatic evidence is provided by analysis over time, showing for a single district how the arrival of a federal facility and the increase in federally connected ADA influences the various measures of financial effort.

To the extent possible we wish to distinguish between effects on ability to provide education and the voluntary effort made by the community. Technically, we may split local expenditures into two components: (1) the tax base--generally, assessed property value; and (2) the tax effort, the tax rate applied to the base. Legal restrictions and requirements, lags and inconsistencies in assessment practice, etc., make such rigorous division inappropriate for cross-sectional analysis. Nevertheless, for any one community, impacts on tax base and tax rate may be analyzed separately to some extent. The changes in assessed value caused by federal connection reflect the differences in assessed value per pupil for federally and nonfederally connected families. Thus, the arrival of a large number of 3(a) pupils will be expected to depress immediately the tax base on a per pupil basis. The response of the community will be indicated by the way in which it alters the tax rates to accommodate the change in tax base. It can then be determined if state aid and federal entitlements sufficiently complement local effort to relieve the burden of federal impact.

Analysis over time is also essential to discern the length of time over which the federal impact has a depressing effect on tax ability, and to discern if the federal activity generates a change in attitudes that affect tax effort.

These analyses were conducted for 85 heavily impacted districts in the state of California in the period 1957-64; the results are presented in the following section of this chapter.

One difficulty with time series analysis is that the impact of that which you wish to measure cannot readily be isolated from other events occurring in the district. Federal impact can be partially isolated by grouping districts, and by attempting to determine what specific other events are affecting the variables. Nevertheless, the problem of impact identification remains. One technique for measuring impact is to hold other events constant by the use of multiple regression. In this technique, the impact variable (i.e., the proportion of federal ADA), is introduced into an equation with other variables representing the socioeconomic characteristics of the area; the dependent variable is local expenditures on education (local ability and effort combined). The sign and size of the coefficient of the impact variable represent the direction and magnitude of the net impact of federal activity on local spending. This analysis was conducted for 16 states, the results of which are presented in a later section of this chapter.

Impacts on school programs, student performance, and the like cannot readily be identified by statistical techniques both because these impacts are not likely to be major, except where the federal activity has been placed in an area with population significantly different in social characteristics from those of the federal employees, and because federal impact is relatively small in most entitled districts (72% of entitled districts had entitlements less than 10% of their current expenses of education). A study which attempted to measure statistically the difference in school programs and educational achievement in 800 high schools is provided in Appendix G. In addition, discernible impacts of a qualitative nature in the five case studies reported in Volume II are discussed in a later section of this chapter.

* * *

Impact on California School Districts of Federal Payments under P.L. 874*

The analysis of the impact on California school districts of federal payments under P.L. 874 was designed to complement the information, relating to a large number of school districts, that was analyzed on a nationwide basis for one point in time and information, covering a 10-year period in considerable depth, that was developed for five case study districts. The study was confined to California because: (1) the state is the largest recipient of P.L. 874 funds in the nation; (2) all types of federal impact and changes in federal impact are represented; (3) problems of district comparability are less critical than for a multistate study; (4) considerable data on school districts of both a fiscal and nonfiscal character are available from a recent SRI study on school district financing; and (5) the time and cost associated with data collection are minimized by using the Institute's home state.

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* By Ernest C. Harvey

Method of Approach

The approach employed involved developing data on recent trends of variables reflecting local financial capacity, effort, and performance for a sufficient number of federally affected school districts to permit generalizations to be made concerning the impact on school district operations of changes in enrollment attributable to federal activities. Districts selected for analysis included all elementary districts of 100 or more average daily attendance (ADA) entitled to federal funds, under P.L. 874, equal to 10% or more of current expense of education and all high school and unified districts receiving federal funds equal to 5% or more of current expense of education. This method of screening districts resulted in the selection of 46 elementary districts, 27 high school districts, and 12 unified districts that were widely distributed within the state.

Since the time and cost constraints imposed on this study did not permit detailed analysis of each of the 85 districts selected, major emphasis was placed on assessed value, revenues obtained from local sources, and current expense of education, as indicators of local capacity, local effort, and local performance. Data were collected for these variables for the fiscal years 1957-63; information for the same period was also developed on total ADA, Section 3(a) and 3(b) ADA, federal entitlement, tax rates, and state apportionments.*

Since the primary purpose of the study was to evaluate changes in district operations over time relative to an acceptable norm, the major variables were expressed on a per ADA basis and compared with the appropriate state averages. The state averages for all districts were used as norms in the analysis of unified districts. For elementary and high school districts, averages for all elementary schools and all high schools, exclusive in both cases of Los Angeles City, were employed. The Los Angeles City districts were excluded from the statewide norms because they tended to dominate the averages and because they became a unified district as of fiscal year 1962, causing significant shifts in the averages.

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* Data sources employed were: State Controller, Annual Report of Financial Transactions Concerning School Districts in California, fiscal years 1956-57 to 1962-63; and Federal Office of Education, unpublished records maintained by the Division of School Assistance.

Ideally, assessed value data employed in the study should have been equalized to eliminate the effect of varying ratios of assessed to full value--both over time and among districts. However, sufficient data were not available to permit an adequate adjustment to be made. Furthermore, analysis of available data indicated that, for most districts, basic trend relationships would not be affected by such an adjustment. This is discussed in more detail in Appendix E.

ADA's for high schools and elementary schools were adjusted to reflect organizational arrangements for junior high school instruction. Pupils attending a junior high school maintained by a high school district but whose attendance is credited to an elementary school for federal entitlement purposes, were included in the ADA of the elementary school and excluded from the high school ADA. The basis for this shift in ADA and the adjustments required to ensure comparability of data are discussed in Appendix F.*

During the period for which analysis was undertaken--1957-63--California experienced rapid growth in population and economic activity. All governmental functions were affected by this growth, but the pressures on the public school system were both large and widespread. Federal government activities or activities induced by the federal government also increased during the period, and enrollment in the schools attributable to these activities grew rapidly. However, growth in enrollment has been characteristic of most school districts in the state, whether or not associated with federal activity. The specific impact of federal activities, therefore, is difficult to identify.

To develop a basis for analyzing the impact of changing federal entitlement, the school districts selected for study were grouped according to the magnitude and direction of the change occurring in the percentage of federal to total ADA.† School districts experiencing sharp short term changes in federal ADA were placed in a category to be called Case I. Other districts were classified as follows: those experiencing an increase during the study period in percent of federal to total ADA (Case II); and those experiencing a relative decrease in federal ADA (Case III). School districts where the proportion of federal ADA remained approximately constant during the period or where erratic changes in ADA, assessed value per ADA, or expenditures per ADA occurred, could not be classified in this way and were treated separately for discussion purposes. The results of this analysis are presented in the following section.

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* In the analysis contained in this section, elementary ADA includes tuition pupils attending junior high schools maintained by high school districts; high school ADA excludes these pupils.

† The terms "federal ADA" and "entitled ADA" will be used interchangeably in this study. It is recognized that in some school districts a portion of the ADA may be federal but not entitled; where a total including such nonentitled ADA is discussed, the term "gross federal ADA" will be employed.

Analysis of Federal Impact

A sudden and substantial change in federal ADA (Case I) should have an immediate impact on assessed value per ADA (henceforth referred to as V/N) and on local revenues per ADA (henceforth referred to as L/N).* If federal and state payments react adequately to this change, current expenditures per ADA (henceforth referred to as C/N) should not be affected.

On the other hand, the impact of a more gradual change in federal ADA may be overshadowed by the impacts of other factors influencing a given school district. In general, a depressing effect on V/N can be expected if the proportion of federal ADA increases over time (Case II). Similarly, V/N can be expected to increase if the proportion of entitled ADA decreases (Case III). However, the magnitude of these effects will vary substantially according to the relative importance of the federal ADA, the ratio of Section 3(a) to total federal ADA, the rate of change in entitled ADA, the rate of change in nonfederal ADA, the growth in nonresidential assessed valuation, and other factors. Furthermore, there will be departures from the expected pattern if substantial changes, not related to federal activity, occur.

Case I Districts

Districts classified as Case I are listed in Table 27. They include five elementary districts and one unified district. Data developed for Wheatland Elementary District and Mojave Unified District are discussed first because they illustrate the impact of a sudden and substantial increase and a sudden and substantial decrease, respectively, in federal ADA.

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* Local effort was defined, for the purposes of this analysis, as school district taxes plus other local income, including that received from the county in which the district is located.

In Wheatland Elementary District, Yuba County, federal ADA increased from zero in 1957 to 1,505 in 1963. Nonfederal ADA increased but slightly and, as a result, federal as a proportion of total ADA increased from zero to 85%. Section 3(a) ADA alone increased from zero in 1959 to 82% of total in 1963.

The immediate effect of this change in ADA, particularly the increase in Section 3(a) ADA, was a sharp decline in V/N relative to average V/N for the state* (Chart 1 and Table 28). As would be expected, L/N relative to the state average followed a similar pattern. On the other hand, C/N continued the decline that was already under way in 1957-59, but stabilized at about 80% of the state average.

The substantial decline in local capacity to meet the cost of education was offset by increased state apportionments and federal entitlement. The former increased from $148 per ADA in 1959 to $220 per ADA in 1963; federal entitlement increased from $13 to $177 per ADA during the same period. No change in tax effort was required during the period; the general purpose rate remained at 90 cents per $100 assessed value and other school tax rates varied between 11 and 17 cents.

Changes occurring in Mojave Unified District in Kern County illustrate the impact of a sudden and substantial decrease in federal entitlement (Chart 2 and Table 29). Entitled Section 3 ADA decreased from 39 to 15% of total ADA during the period 1957-63. Section 3(a) ADA, which constituted 11% of total in 1957, decreased to zero in 1960. As a result, V/N increased sharply between 1958 and 1960. Between 1960 and 1963, the rate of increase in V/N was about the same as for the state as a whole; during this period federal ADA remained relatively constant. As in the case of Wheatland Elementary School, L/N, relative to the state average, followed about the same pattern as V/N. There was a relative increase in C/N during the period in spite of a reduction in both federal entitlement and state apportionments. The increase in assessed value per ADA permitted a declining tax rate between 1957 and 1960. However, higher tax rates were required in 1961 and 1962 to permit C/N to keep pace with the state average.

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* As indicated above, the statewide average is for all districts in the case of unified districts; for all elementary districts excluding Los Angeles in the case of elementary schools; and for all high school districts excluding Los Angeles in the case of high schools.

In Central Elementary District, Kings County (Chart 3 and Table 30), federal ADA increased from zero to 102 over the period 1957-61 and jumped to 829 in 1962 and 1,233 in 1963. A declining V/N accompanied the initial growth in federal ADA followed by a sharp drop because of the large increases in ADA in 1962 and 1963. As in the case of the districts analyzed above, L/N followed the pattern of V/N. With a declining V/N during the period 1957-62, income was insufficient to meet expenditures without an increase in the tax rate. However, the increased federal and state payments in 1962 and 1963 permitted a reduction in the tax rate in 1963.

Current expense per ADA fluctuated somewhat during the period but, on the average, remained at approximately the same level. As a result, C/N relative to the statewide average drifted downward during the period.

Federal ADA in Ocean View School District, Ventura County, (Chart 4 and Table 31), increased from 70 to 391 in 1959, and to 612 in 1963. The immediate impact of the 1959 increase was a sharp drop in V/N. This decline was partially recovered in 1961 as a result of a large increase in assessed value due to a reassessment and to an adjustment in the ratio of assessed to full value used by local assessors. Local effort per ADA experienced the same drop from 1958 to 1959 as occurred in assessed value. However, the ratio fluctuated for the remainder of the period due to changes in tax rates. The tax rate was cut in half in 1961--associated with the large increase in assessed value, a high state apportionment,* and a substantial federal payment. The 1962 increase in tax rate was required to offset the decline in state apportionment. Relative to the state average, C/N declined, 1957-59, but increased for the remainder of the period. The increase reflected the same combination of circumstances discussed above.

In Pleasant Valley School District, Ventura County (Chart 5 and Table 32), federal ADA increased from 157 to 233 between 1957 and 1959, to 497 in 1960, and to 865 in 1963. Again, the impact on V/N is clearly discernible--a sharp drop in 1960 and a continuous decline thereafter. The rate of decrease in assessed value per ADA was somewhat slowed between 1960 and 1961 because of an increase in overall assessed value. This increase, as in the case of Ocean View, was the result of reappraisals and a shift in the ratio of assessed to full value used by local assessors.

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* Since the state apportionment for a given year is based on assessed value data for the preceding year, the 1961 increase in assessed value did not affect the state apportionment for that year.

Since tax rates were maintained at approximately the same level for most of the period, the relative decline in L/N was similar to that of V/N. Although C/N tended to increase during the period, the increase was less rapid than statewide; C/N, therefore, declined relative to the state in spite of increases in federal entitlement and state apportionments.

Federal ADA in San Miguel Joint Union School District (Chart 6 and Table 33) fluctuated rather widely during the period, although the numbers were relatively small (range: 29 to 78). Total ADA in the school district was also small and the impact was immediately noticable. Thus, although assessed value increased quite slowly over the period, fluctuations in ADA resulted in marked fluctuations in V/N. In general, local effort fluctuated in the same way as V/N, in spite of fluctuations in the tax rate. Current expense per ADA also fluctuated but tended to move upward during the period. In general, both federal payments and state apportionments followed the fluctuations in V/N. As indicated earlier, there is a one-year lag in the response of the state apportionment to a change in V/N.

Case II Districts

Districts classified as Case II--those with a steadily increasing proportion of federal enrollment--in which V/N declined relative to the state average during the period 1957-63 are listed in Table 34. Of the 22 districts, 9 are elementary, 12 are high school, and one is unified. Districts classified as Case II in which V/N increased relative to the state average--exceptions to the expected trend--are listed in Table 35. There are 5 elementary, 6 high school, and 2 unified districts. Prior to discussing the general characteristics of these two groups of districts, an example of each group is analyzed to illustrate the factors responsible for the differing trends.

Muroc Unified District in Kern County (Chart 7 and Table 36) illustrates changes that might be expected in districts in which the proportion of federal ADA increased. During the period 1957-63 federal ADA increased from 67 to 73% of total. Most of this increase consisted of Section 3(a) ADA which increased from 57 to 65% of total during the period. Although district assessed value increased at about the same rate as in he state as a whole, the more rapid increase in ADA caused a decline in /N as shown in the following tabulation:

	Ratio, 1963/1957	
	Muroc	All Districts
N	1.86	1.44
N_f	2.02	n.a.
V	1.54	1.53
V/N	0.83	1.06

As in the case of the districts discussed previously, L/N followed the same pattern as V/N. However, C/N relative to the state average tended to increase over the period in spite of this decrease in local capacity and a relatively small increase in tax rates. Both state apportionments and federal entitlement increased on a per ADA basis during the period to offset the relative decline in local effort.

In Alameda Unified District (Chart 8 and Table 37) V/N increased from 66 to 75% of the state average. This increase occurred in spite of an increase in the proportion of federal ADA, from 32 to 35% of total ADA. Section 3(a) ADA also increased from 5 to 7% of total. Except for the 1957-59 time period, when tax rates were increasing, the change in L/N was similar to that of V/N.

Certain important differences between Alameda and Muroc districts were responsible for the different trends in V/N. Alameda was relatively stable in terms of total ADA--there was only a 2% increase during the period as compared with an 86% increase in Muroc. Nonfederal ADA declined in Alameda, partially offsetting the increase in federal ADA, whereas nonfederal ADA increased in Muroc. Furthermore, Section 3(a) ADA constituted a small proportion of total in Alameda. Some of the increase in assessed value resulted from the development, in 1962, of a filled area not previously assessed; the development consisted of multiple units characterized by relatively low ADA per household.

Districts in Which V/N Declined Relative to the State Average. Because of the large number of districts involved (Table 34), data are presented separately for elementary districts and for two groups of high school districts. Data on the relative changes that occurred in V/N during the period 1957-63 are presented in Charts, 9, 10, and 11. Although considerable variation existed in the rate of change in V/N relative to the state average, the charts indicate that the most rapid decreases were characteristic of districts with relatively high V/N at the beginning of the period under review. This type of response to an increasing ADA would be expected since districts with large V/N are typically characterized by large amounts of rural or unimproved land or by considerable assessed value derived from nonresidential property. Any substantial change in ADA would have a noticeable effect on V/N, especially if it was accompanied primarily by residential growth, as would be the case with federal impact.

Other variations in relative V/N were associated with changes in assessed value not related to federal activities, to changes in the rate at which the proportion of federal to total ADA changed, and changes in the mix of federal ADA. Table 38 contains summary data reflecting these changes. Although ratios of 1963 to 1957 values do not reflect changes occurring in the intervening years, they indicate the overall relationships. In most districts, assessed value increased at a rate equal to or greater than the state average. So also did total ADA, but typically at a more rapid rate than assessed value, resulting in a declining V/N relative to the state average. Assessed value increased less rapidly in Santa Maria and Monterey High school districts than for the state as a whole, while total ADA increased more rapidly. In Moorpark Memorial, assessed value actually declined during the period. Section 3(a) ADA was important in Yermo Elementary and Monterey High school districts, increasing from 45 to 70% of total in Yermo and from 11 to 20% in Monterey. In Yermo district, nonfederal ADA declined while federal ADA nearly doubled.

Some of the changes not reflected in Table 38 are illustrated by the trends in V/N for Hinkley, Orcutt, and Marina elementary districts (Chart 9). In the case of Hinkley Elementary District (San Bernardino County), the downward movement in V/N was reversed in 1959 because of a substantial increase in assessed value. Similarly, the sharp relative decline in V/N in Orcutt Elementary School District (Santa Barbara County) stopped because of large increases in assessed value occurring in 1961 and again in 1963. Again, in Marina Elementary District (Monterey County), an increase in assessed value occurred in 1960, temporarily reversing the downward movement of V/N relative to the state average. Frequently, these shifts in assessed value resulted from reassessments or changes in the assessment practices of local assessors.

Charts 12, 13, and 14 present data on trends in L/N relative to the state average for the elementary and high schools discussed above. It was noted in the discussion of Case I districts that L/N tended to be similar in trend to V/N. Although this tendency is evident for many of the districts for which data are presented in Charts 12, 13, and 14, there are exceptions.*

These exceptions are a reflection of changing tax rates in the districts involved, generally to support an increasing cost of education. In Browns Valley, for example, tax rate increased from $0.84 to $1.36 between 1958 and 1959, and remained relatively constant thereafter. The effect was a jump in relative L/N in fiscal year 1959, followed by a decline during the period 1959-63. In Yermo Elementary District the tax rate increased in 1958, decreased in 1959, increased in 1960, decreased in 1961, and increased again in 1963. The result of changing tax rates of this type, combined with a declining assessed value per ADA, was sharp fluctuations in local effort per ADA. In Santa Ynez High School District the tax rate increased from $1.15 to $1.51 in 1961, tending to offset the effect of the downward trend in V/N. The rates were increased in 1960 and 1962 in Merced High School District, primarily to support an increased level of expenditure in the face of declining V/N. It should be pointed out that large tax increases typically occur at irregular intervals, depending upon the requirements of individual school districts. The average for the state, however, combines changes taking place at different points in time in different districts and tends to show a more gradual trend.

Charts 15, 16, and 17 present data on trends in C/N relative to the state average for the districts analyzed above. Several observations can be made from perusal of these charts: (1) there is much less variation, relative to the state average, in C/N than in V/N or L/N; (2) districts with above average C/N tend to show more variation than districts with below average C/N; (3) there is a tendency for districts to approach the state average in terms of C/N.

The extent to which an increasing proportion of Section 3 ADA affected the trend in relative C/N cannot be ascertained from the data developed. However, analysis of the information on receipts from local and state sources and on federal entitlements indicated that unless tax rates were increased, overall receipts tended to decline on a per ADA basis in districts where a substantial decrease in V/N occurred. In other words, increases in state and federal payments were not sufficient to offset rapid declines in local capacity in districts with high relative V/N at the beginning of the period. This would be expected since federal entitlement is based upon group rates and since state apportionments are designed to provide a measure of equalization among districts.*

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* Data are not shown for Monterey High School District because of organizational changes that took place during the period. A grade span of 9-14 was maintained between 1957 and 1960 when grades 7 and 8 were added; grades 13 and 14 were dropped in 1962. These changes had a substantial impact on L/N and are obviously not related to changes in federal ADA.

Districts in Which V/N Increased Relative to the State Average. Alameda Unified District was used above as an illustration of an exception to the expected trend for districts in which federal ADA increased as a proportion of total ADA (Case II districts). One other unified district, five elementary districts, and six high schools also experienced level or increasing trends, despite an increasing proportion of federal ADA (Table 35).

Various influences caused these exceptions to the expected trend. In several districts, the increase in the proportion of federal ADA was the result of a decline in nonfederal ADA or of a less rapid increase in nonfederal than in federal ADA. In some districts assessed value increased primarily because of revaluation of property. In others, economic growth, and the resulting assessed value, outpaced the increase in school enrollment.

Sausalito Elementary District (Table 35) illustrates the combined effect of several of these influences. Both federal and nonfederal ADA declined during the period, the latter more rapidly than the former. At the same time, assessed value increased rapidly, reflecting multiple unit and high-priced single family residential development and expansion of commercial activities catering to tourists and Bay Area visitors. The combined effect of a declining total ADA and an increasing assessed value was an increase in V/N from 66 to 142% of the state average.

In Victor Valley High School District V/N also increased rapidly--from 148 to 177% of the state average. The factors responsible were a revaluation of property, an organizational change resulting in loss of both ADA and assessed value to two newly formed unified districts, and rapid economic growth.

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* The tendency for C/N to decline over time, as ADA increases in districts with relatively high C/N, has been observed for districts that are not federally affected. Frequently, this has resulted from a reduction of instructional cost per ADA associated with increasing pupil-teacher ratios.

In general, local effort tended to reflect the pattern of V/N in the districts listed in Table 35. As was noted for other Case II districts, there was also a tendency for C/N to approach the state averages.*

Case III Districts

Districts classified as Case III--those with a decreasing proportion of federal enrollment--in which V/N increased relative to the state average are listed in Table 39. As indicated earlier, an increasing V/N would be expected where the relative importance of federal enrollment is decreasing. Case III districts in which V/N declined relative to the state average--exceptions to the expected trend--are listed in Table 40. Prior to discussing the general trends characterizing these districts, detailed data are analyzed for districts illustrating each group.

In Pacific Grove Unified District (Chart 18 and Table 41), there was an overall decline in federal ADA and an increase in nonfederal ADA during the period, and federal as a proportion of total ADA decreased from 28 to 22%. Actually, federal ADA increased from 796 to 961 between 1957 and 1960 and decreased to 766 in 1963. The latter decrease resulted from the development of housing at Fort Ord--the pupils moving out became Section 3(a) ADA in another district.

Assessed value also increased during the period as a result of growth in the district--largely residential--and reassessments that were made in 1960 and 1962. The 1962 reassessment was primarily responsible for the large relative increase in V/N in fiscal year 1963. Some of the residential development consisted of multiple units with relatively small ADA's per household.

Current expense of education retained its relative position between 1957 and 1962. The increase in 1963 resulted from a general upgrading of salary levels. Consequently, local effort increased substantially between 1962 and 1963, a reflection of the increase both in assessed value per ADA and in tax rates designed to meet increased costs of instruction. The 1957-58 increase in L/N was also associated with an increase in the tax rate. During the years 1958-62, the tax rate increased at about the same rate as occurred statewide.

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* This was not true of Sausalito, where C/N increased from 119 to 138% of the state average. Current expense of education increased steadily during the period, but at a rate less than that characteristic of elementary districts generally; since ADA declined C/N increased relatively.

Coronado Unified School District in San Diego County (Chart 19 and Table 42) is illustrative of districts in which V/N declined in spite of a declining proportion of federal to total ADA. This proportion declined from 72 to 66% between 1957 and 1963, and is a reflection of a more rapid increase in nonfederal than in federal ADA, not a decrease in federal ADA.

The district grew as a residential area during the period and enrollment in the schools increased more rapidly than did overall growth in assessed value. As a result, V/N declined in both absolute terms and relative to the state average.

In spite of an increase in the tax rate in 1959 and again in 1962, L/N trended downward relative to the state average during the period. Current expense of education per ADA declined relatively from 1957 to 1960, but recovered during the remainder of the period largely as a result of increased state and federal payments.

The examples discussed above are primarily illustrative. In districts with similar characteristics, generally similar responses to changes in federal ADA would be expected. However, many other factors affect district operations, and considerable variation will be found among the districts characterizing the California school system. Some of the bases for varied responses have already been indicated. In the following discussion recent trends in other districts classified in Case III will be analyzed to determine the major factors influencing the impact of changes in federal ADA.

Districts in Which V/N Increased Relative to the State Average. Table 43 presents summary information on changes in total, nonfederal, and federal ADA, and on assessed value for the districts listed in Table 39. In all districts, assessed value increased more rapidly than statewide and more rapidly than ADA over the period 1957-63. Except for Hueneme and Folsom districts, increases in federal ADA were relatively small; in four districts, federal ADA declined.

In general, increases in assessed value reflected overall economic growth in the areas in which the school districts were located and reassessments made from time to time. For example, in Daggett Elementary School District, V/N increased 320% during the period 1957-63. Substantial increases in assessed value occurred in 1957 and 1961, in the former year resulting from reassessment of property on a countywide basis and in the latter from a combination of reassessment and general economic growth. Total ADA increased slowly because of a decline in federal ADA. Another cause of fluctuating assessed value is illustrated by Palmdale Elementary

District where much of the assessed value base is in aircraft manufacturing, and changes in assessed value are typically associated with the taxability of the final product. Aircraft manufactured for foreign use is taxable while that manufactured for the U.S. government is not. Because of production for foreign sale, assessed value increased in 1961-62, in spite of the general reduction in assessments that occurred in Los Angeles County at that time.

Folsom Unified School District presents an interesting example of rapid increases in V/N associated directly with federal activities. Section 3(a) ADA increased from 625 to 1,363 and Section 3(b) ADA increased from 658 to 2,069 during the period 1957-63. The major contributors of this ADA were Mather Field, Aerojet General, and Douglas. In spite of these increases in entitled ADA, the proportion of entitled to total ADA declined from 55 to 43% during the period, because of the large increase in nonentitled ADA resulting from expanding operations at Aerojet and Douglas. Much of the property at these two operations is taxable, and commingled facility percentages are computed for both--currently 30% for Aerojet General and 17% for Douglas. Thus, in 1963, gross federal ADA was 5,607 as compared with an entitled ADA of 3,442. Local effort in Folsom Unified District increased in a manner corresponding to the increase in assessed value per ADA. However, some tax increases were required to maintain C/N relative to the state average because of declines in the state apportionment per ADA and federal entitlement per ADA.

Several characteristics noted for Case II districts are also applicable to the Case III districts listed in Table 39. These are: wide variation in V/N and L/N relative to the state average and over time; limited variation in C/N relative to the state average and over time in the case of most districts; more striking changes over time in districts with high V/N at the beginning of the period than in districts with low V/N; trends in L/N reflecting primarily the changes in L/N.

Districts in Which V/N Declined Relative to the State Average. In one elementary district and four unified districts V/N declined or remained approximately stable relative to the state average, despite a decreasing ratio of federal to total ADA. These districts were listed in Table 40.

The departure from the expected trend in San Jose district resulted from a change in mix of federal ADA. Although federal as a proportion of total ADA declined from 77 to 68%, Section 3(a) ADA increased from 25 to 60% of total.

In San Diego, Coronado, and Novato districts nonfederal ADA increased more rapidly than did federal ADA during the period, resulting in a declining ratio of federal to total ADA. The increase in nonfederal families, by causing assessed value increases of approximately the same magnitude as Section 3(b) families, resulted in a long term decline in V/N relative to the state average.

Klamath-Trinity Unified District in Humboldt County is unique, in that an Indian reservation is involved. Families contributing to federal ADA--either Indians, or whites renting from Indians--live on federal land. There are also some forest service families. Assessed value is based, to a large extent, upon standing timber, and fluctuates from year to year depending on the volume of economic activity. Tax revenues vary according to whether Indians or an outside operation cuts and sells lumber. In addition, land is being converted from federal to private ownership; as titles are cleared the land becomes taxable, but fluctuations occur in the rate at which such land becomes available for taxation. Net increase in assessed value was only 5%, 1957-63.

Very Heavily Impacted Districts

In four elementary districts, entitled ADA constituted more than 75% of total during the entire period 1957-63. Data for 1963 for these districts are presented in Table 44.

The wide range of V/N--from \$519 to \$18,993 per ADA in 1963--caused a wide range in L/N--from \$16 to \$185 per ADA. The range in C/N, as noted for other districts, is somewhat narrower--from \$375 to \$484 per ADA in 1963. The federal payment per ADA is influenced by the proportion of federal to total ADA and the ratio of Section 3(a) to total federal ADA--China Lake, with $N_f/N = 100\%$ and $N_{3(a)}/N = 98.5\%$, received the highest entitlement per ADA. Entitlements per ADA in the other districts differed slightly because of variations in these two ratios.

The state payment is related to assessed value as adjusted to reflect imputed assessed value attributable to the federal entitlement. The effect of the procedure employed in California on these heavily impacted areas is shown in Table 45. In spite of widely differing net entitlements the increments to assessed value are remarkably similar, because of the combined effect of t_s and t_d. The ratio, $.40\ t_s/t_d$, reflects the proportion of federal funds offsetting equalization payments--it ranges from 13% in China Lake to 60% in Herlong. The combined effect of assessed value and tax rate differences was similar state apportionments per ADA in San Joaquin, Adelanto, and Herlong, and a somewhat higher apportionment per ADA in China Lake.

During the period 1957-63 V/N remained approximately constant relative to the state average in Herlong and China Lake but fluctuated in San Joaquin and Adelanto. In San Joaquin assessed value declined, 1957-59, but increased in 1960 as a result of a general reassessment in Orange County. There was also a reassessment in San Bernardino County.

Districts Without a Well-Defined Trend in the Ratio of Federal to Total ADA

In 14 elementary and 9 high school districts the ratio of federal to total ADA remained relatively constant, or fluctuated in such a way that no well-defined trends were evident (Table 46). The proportion of federal to total ADA varied widely among these districts, ranging from 26 to 59% in the case of elementary school districts, and from 20 to 44% in the case of high schools. There were also wide variations in V/N, L/N, and C/N relative to the state average, as indicated by the following tabulation showing ratios for 1963:

Type of District	Range in Relative V/N	L/N	C/N
Elementary	.50-2.67	.30-1.96	.82-1.27
High School	.50-1.57	.66-1.32	.74-1.28

Analysis of 1963 data indicated that there was no relationship between the relative magnitude of V/N, L/N, or C/N and the percent of federal to total ADA or between changes in these variables between 1957 and 1963 and the proportion of federal ADA. The shifts that occurred in these variables, therefore, were associated primarily with influences other than federal activity. As was true of districts analyzed in earlier sections, variation in V/N and L/N was larger than in C/N.

Summary

California school districts selected for study included all elementary districts of 100 or more ADA in which federal entitlement constituted 10% or more of total current expense of education at some time during the 1957-63 time period, and all high school and unified districts in which federal entitlement constituted 5% or more of total current expense. This screening process resulted in the selection of 85 districts--46 elementary, 27 high school, and 12 unified.

These districts were widely distributed within the state and were characterized by large variations in assessed value per ADA, local revenues per ADA, and current expense of education per ADA relative to the state average. Tables 47 to 49 show the distribution of the selected districts according to the relative magnitude of these variables in 1963. Fifty-eight of the 85 districts, or 68%, were characterized by assessed values per ADA less than the state average. The distribution was similar with respect to local revenue per ADA, reflecting the close relationship of local revenue and assessed value. However, with respect to current expense of education per ADA, districts tended to concentrate around the state average, about 50% of the districts were characterized by below average current expense per ADA in 1963.

Low assessed values relative to the state average were more characteristic of elementary and unified districts than of high school districts. In less than 50% of the high school districts, assessed value per ADA was less than the state average in 1963; the percentage was 76% for elementary districts and 83% for unified districts.

To permit analysis to be made of the impact of changes in federal activities, the school districts selected for study were grouped according to the magnitude and direction of change in the proportion of federal to total ADA during the period, 1957-63. Table 50 shows the various groupings employed and the number of elementary, high school, and unified districts classified in each.

In 23 of the 85 districts included in the study, there was no well-defined trend in the proportion of federal to total ADA. Changes occurring in these districts resulted primarily from influences other than shifts in federal activity.

On the other hand, in the 6 districts experiencing sudden and substantial changes in federal activity, immediate impacts were apparent. In general, large decreases in assessed value per ADA and in local revenue per ADA were associated with sudden and substantial increases in the proportion of federal ADA. The reverse was true where the proportion of federal ADA declined sharply. However, current expense per ADA typically maintained its level relative to the state average because of compensatory shifts in federal entitlement and state apportionments.

Because of the rapid changes that have characterized the California economy during the past decade many factors have influenced school district operations. Frequently, the impact of a change in federal activity was overshadowed by other influences, particularly when the change was relatively small and occurred over a number of years. Thus, trends other than those implied by the change in relative federal ADA would be expected. For example, in 35 districts there was an upward trend in federal entitlement as a proportion of total entitlement. The expected trend in assessed value per ADA--a decline relative to the state average--occurred in 22 of these districts; 13 were characterized by a reverse trend. Similarly, in districts experiencing a downward trend in relative federal ADA, 12 were consistent with expectations and 5 were not.

Despite the exceptions noted above, several general conclusions can be made on the basis of the trend analyses:

1. Except where special conditions existed, assessed value per ADA relative to the state average tended to decline as the proportion of federal ADA increased, and tended to increase as the proportion declined.

2. The impact of changes in federal activities was more striking where the change in ADA consisted of Section 3(a) pupils than where Section 3(b) or a mixture of Section 3(a) and 3(b) pupils were involved.

3. The trend in local revenue per ADA relative to the state average tended to follow that of assessed value per ADA.

4. The rate of change in both variables was more rapid for districts with high assessed values and local revenues per ADA relative to the state average at the beginning of the study period than for those with average or below average values.

5. Regardless of the impact of changing federal activity on local revenues per ADA, general levels of current expense per ADA were maintained, and the tendency for district expenditures per ADA to approach the state average was characteristic of the districts selected for study.

CHART 1

SELECTED VARIABLES AS RATIOS OF TOTALS FOR ALL ELEMENTARY DISTRICTS
(Excluding Los Angeles)
WHEATLAND ELEMENTARY DISTRICT
FISCAL YEARS 1957–1963

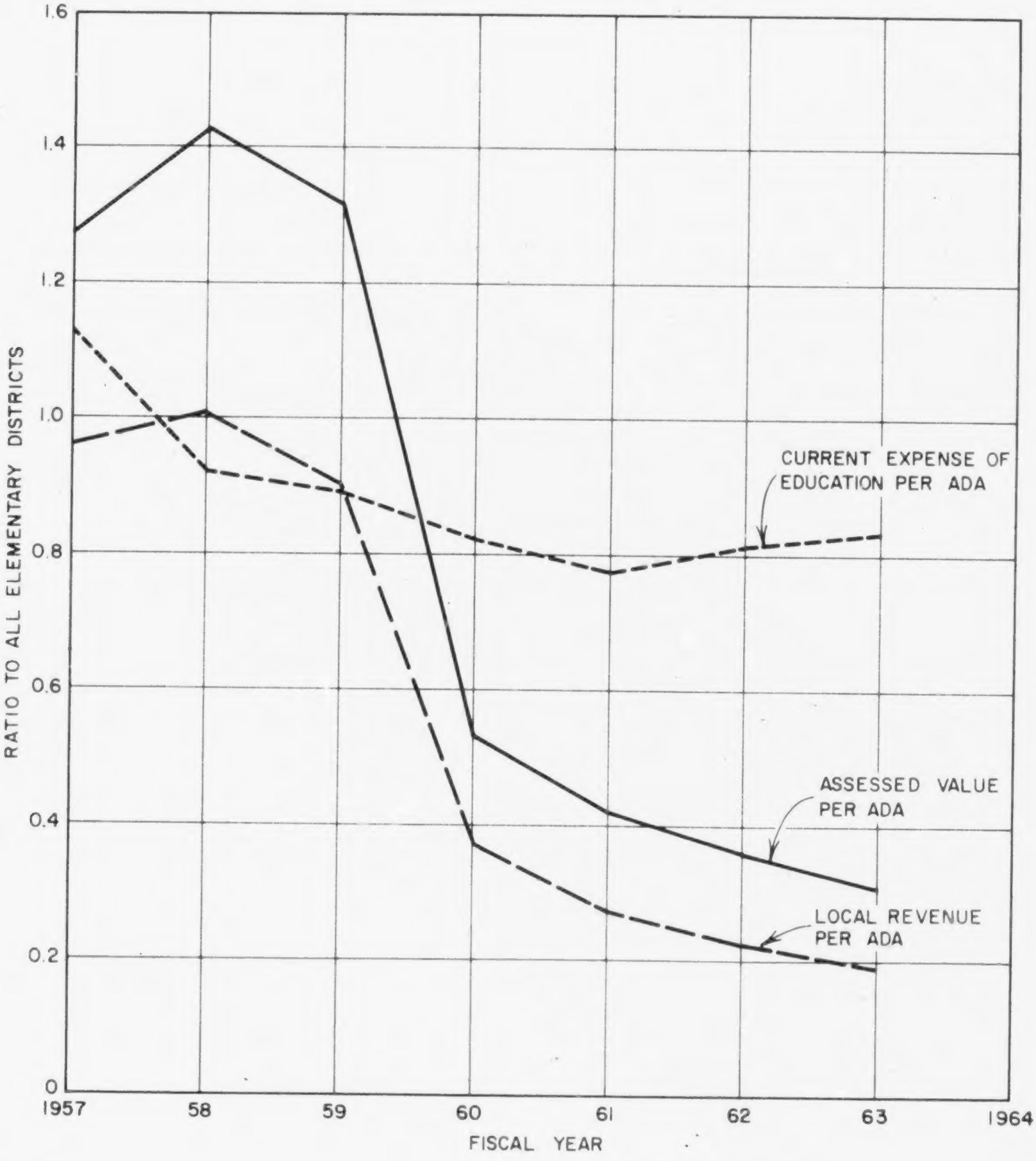

CHART 2

SELECTED VARIABLES AS RATIOS OF TOTALS FOR ALL DISTRICTS
MOJAVE UNIFIED DISTRICT
FISCAL YEARS 1957-1963

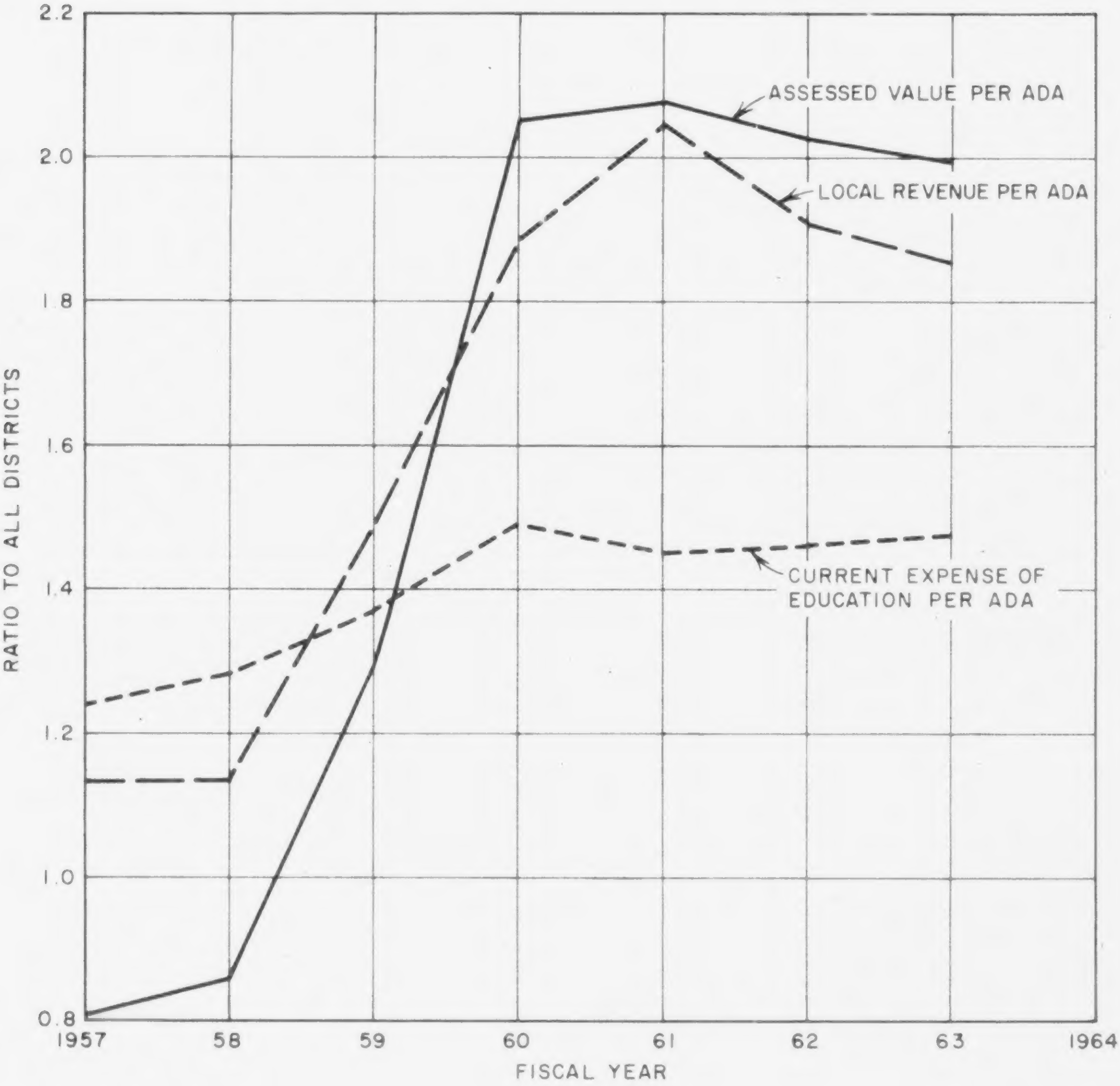

CHART 3
SELECTED VARIABLES AS RATIOS OF TOTALS FOR ALL DISTRICTS
MUROC UNIFIED DISTRICT
FISCAL YEARS 1957-1963

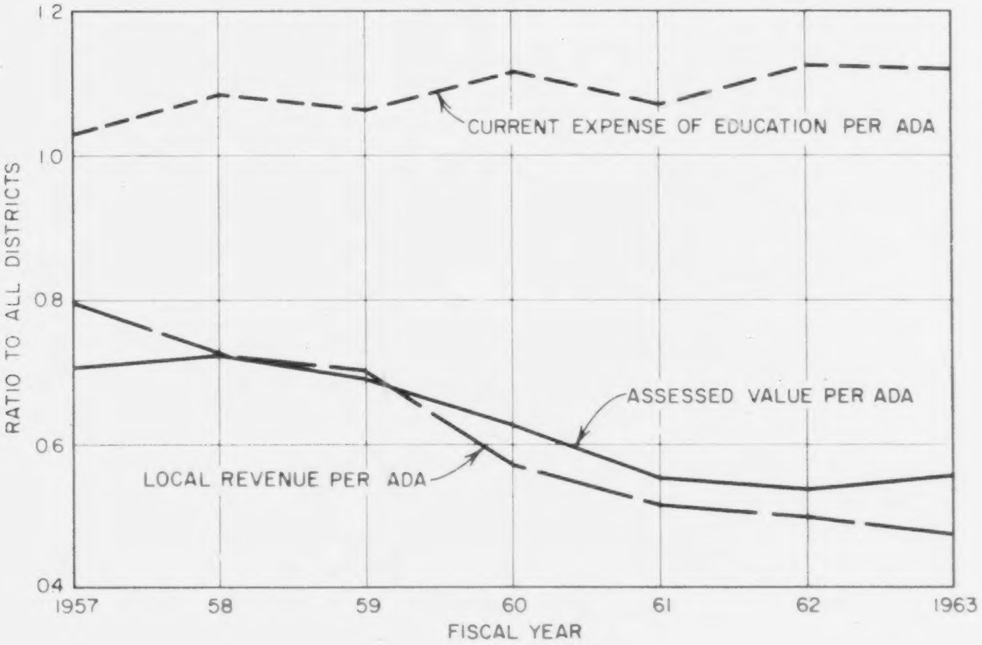

CHART 4

SELECTED VARIABLES AS RATIOS OF TOTALS FOR ALL DISTRICTS
ALAMEDA UNIFIED DISTRICT
FISCAL YEARS 1957–1963

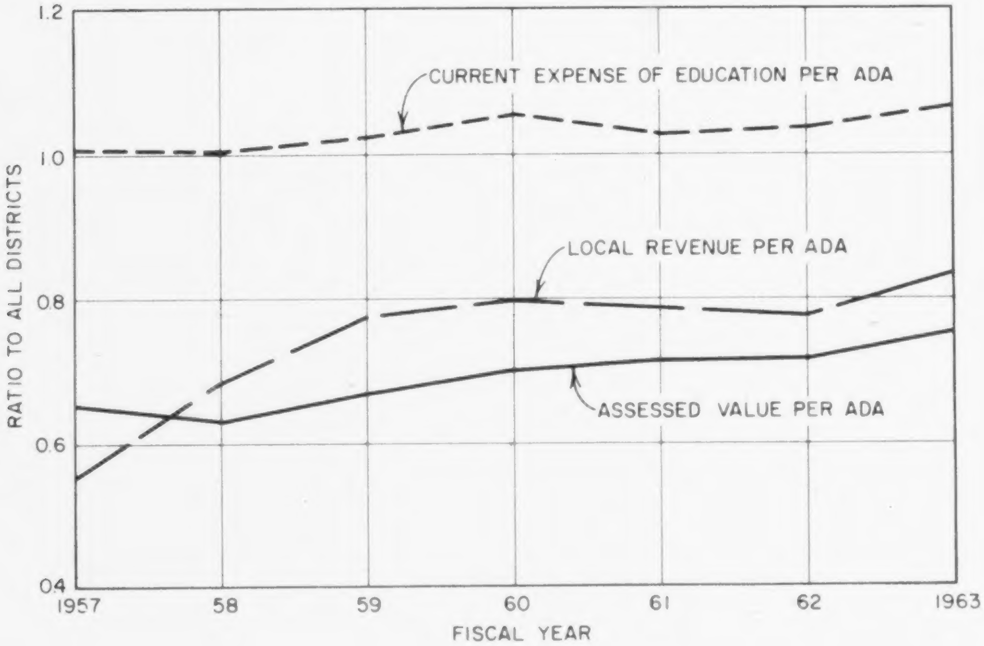

CHART 5

SELECTED VARIABLES AS RATIOS OF TOTALS FOR ALL DISTRICTS
PACIFIC GROVE UNIFIED DISTRICT
FISCAL YEARS 1957–1963

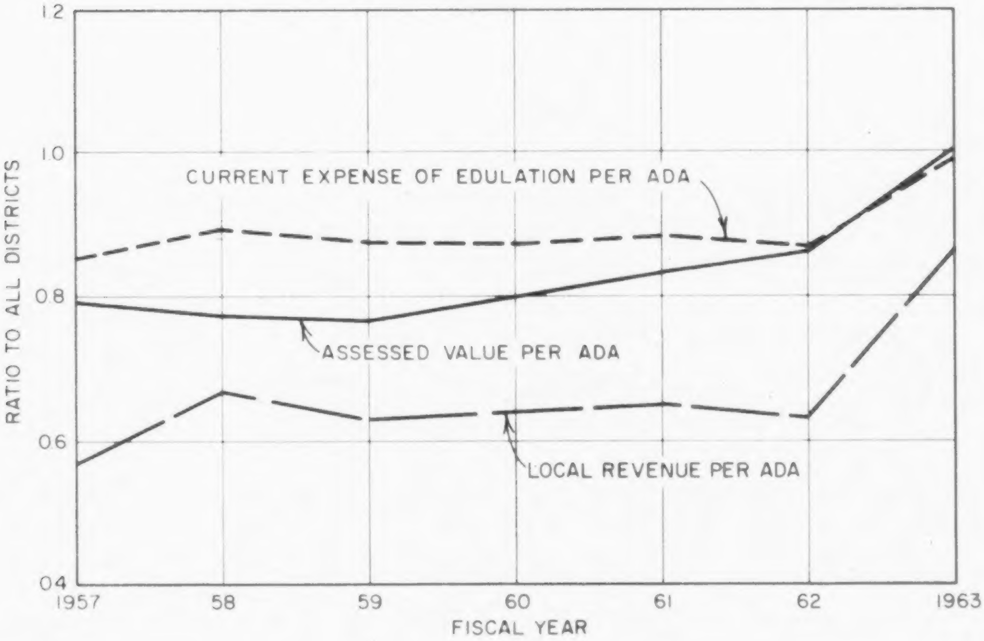

CHART 6

SELECTED VARIABLES AS RATIOS OF TOTALS FOR ALL DISTRICTS
CORONADO UNIFIED DISTRICT
FISCAL YEARS 1957–1963

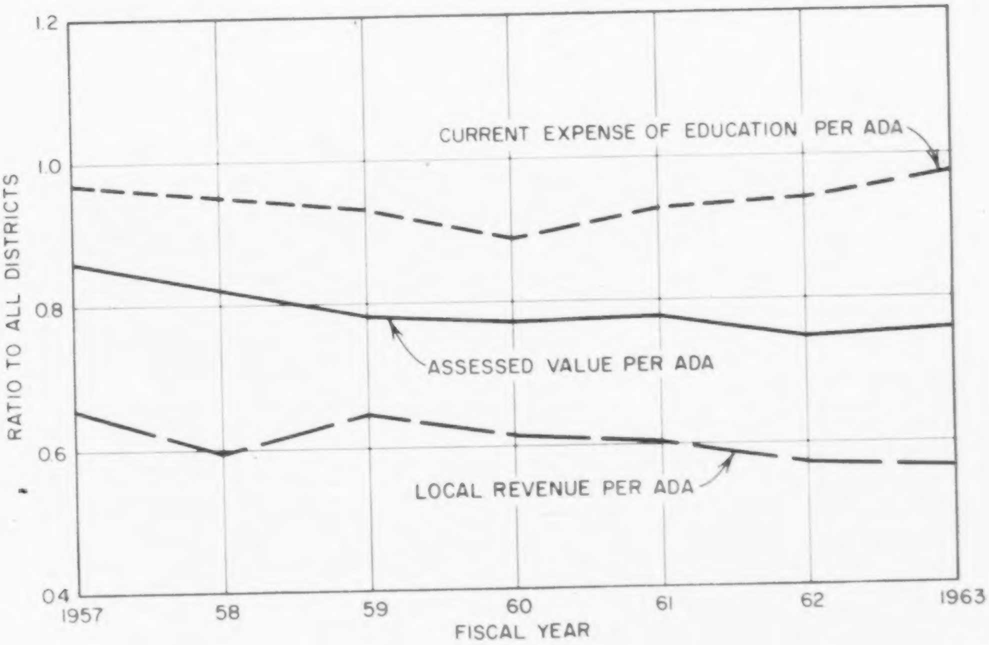

CHART 7

SELECTED VARIABLES AS RATIOS OF TOTALS FOR ALL ELEMENTARY DISTRICTS
(Excluding Los Angeles)
CENTRAL ELEMENTARY DISTRICT
FISCAL YEARS 1957-1963

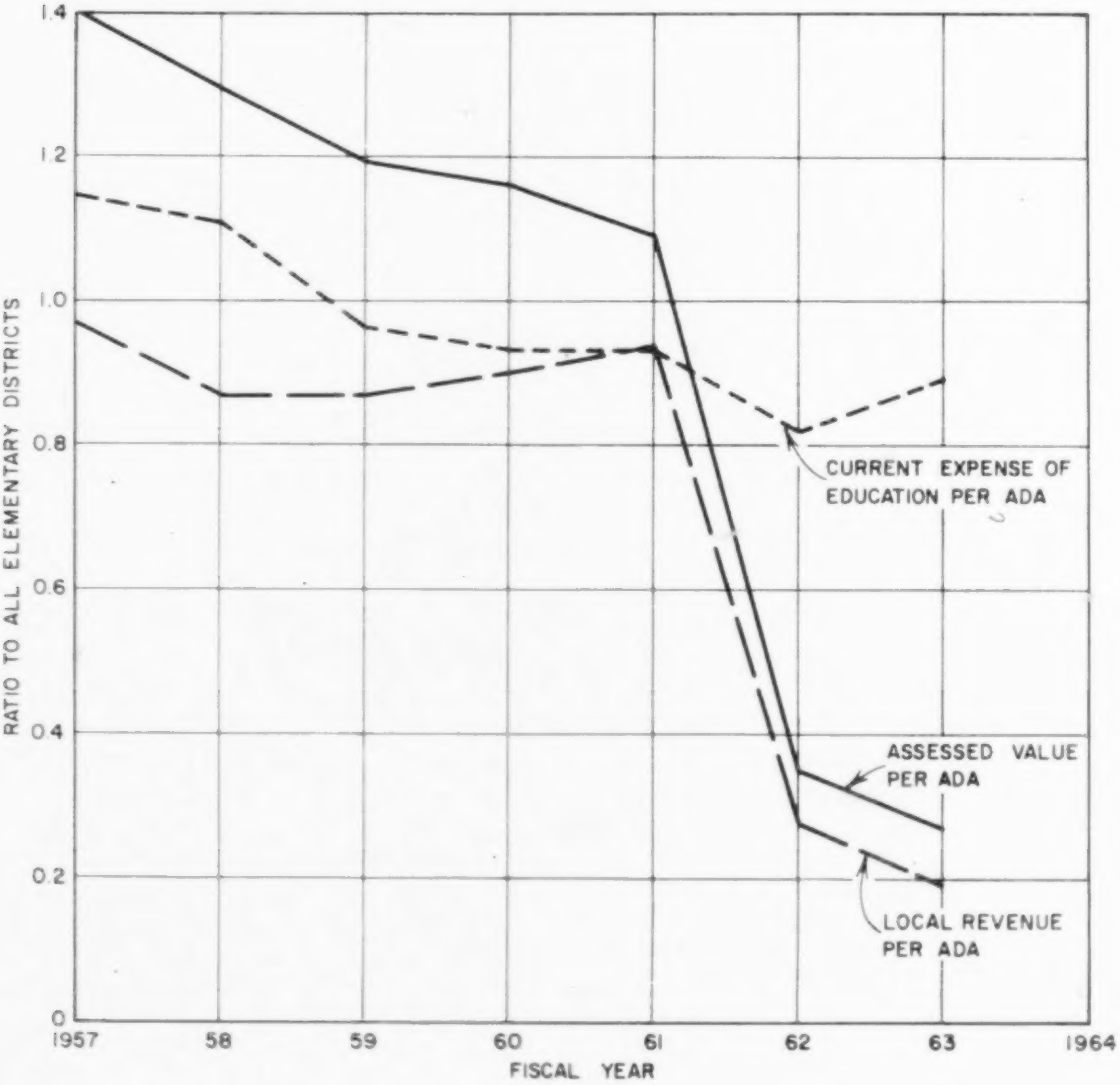

CHART 8

SELECTED VARIABLES AS RATIOS OF TOTALS FOR ALL ELEMENTARY DISTRICTS
(Excluding Los Angeles)
OCEAN VIEW ELEMENTARY DISTRICT
FISCAL YEARS 1957-1963

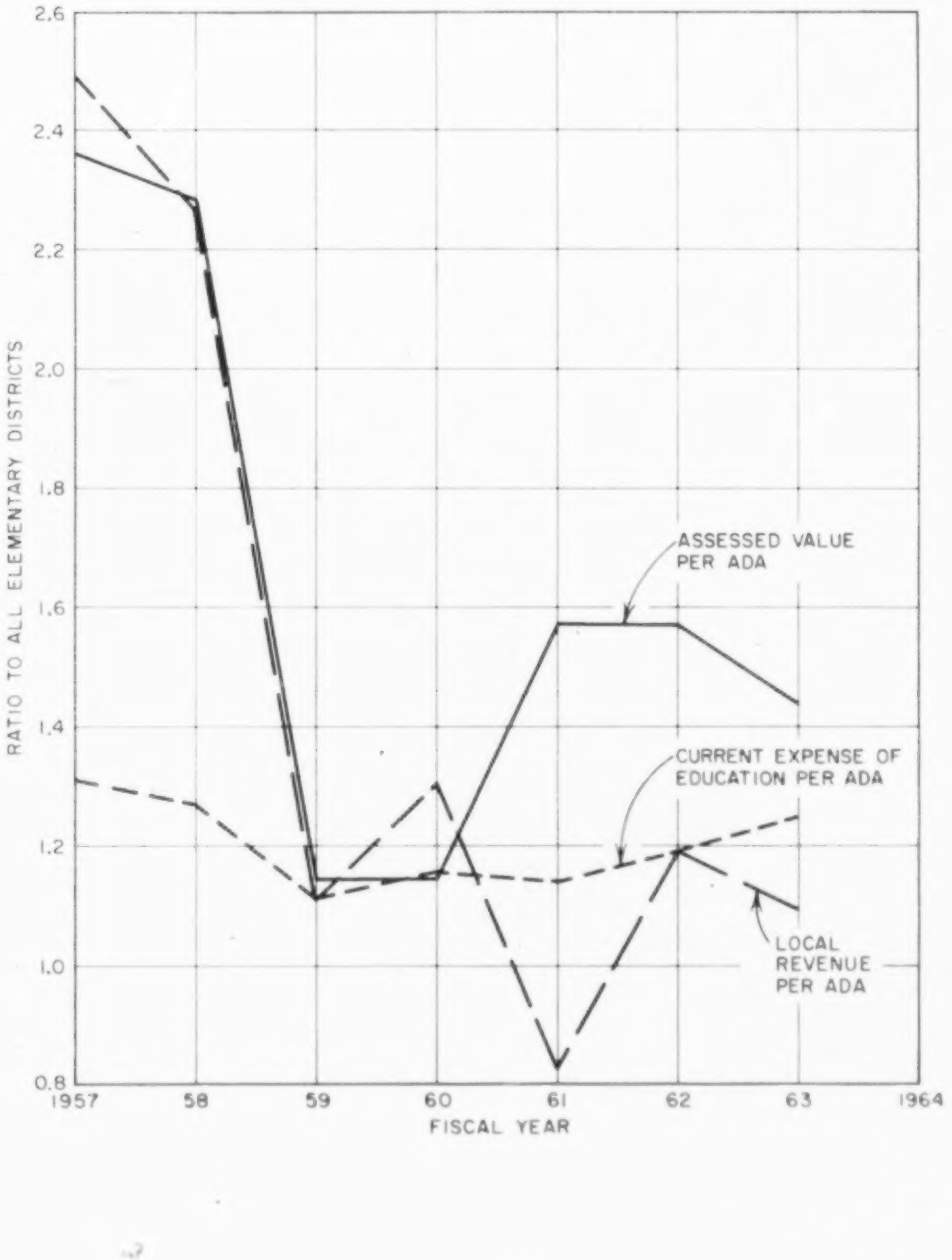

CHART 9

SELECTED VARIABLES AS RATIOS OF TOTALS FOR ALL ELEMENTARY DISTRICTS
(Excluding Los Angeles)
PLEASANT VALLEY ELEMENTARY DISTRICT
FISCAL YEARS 1957–1963

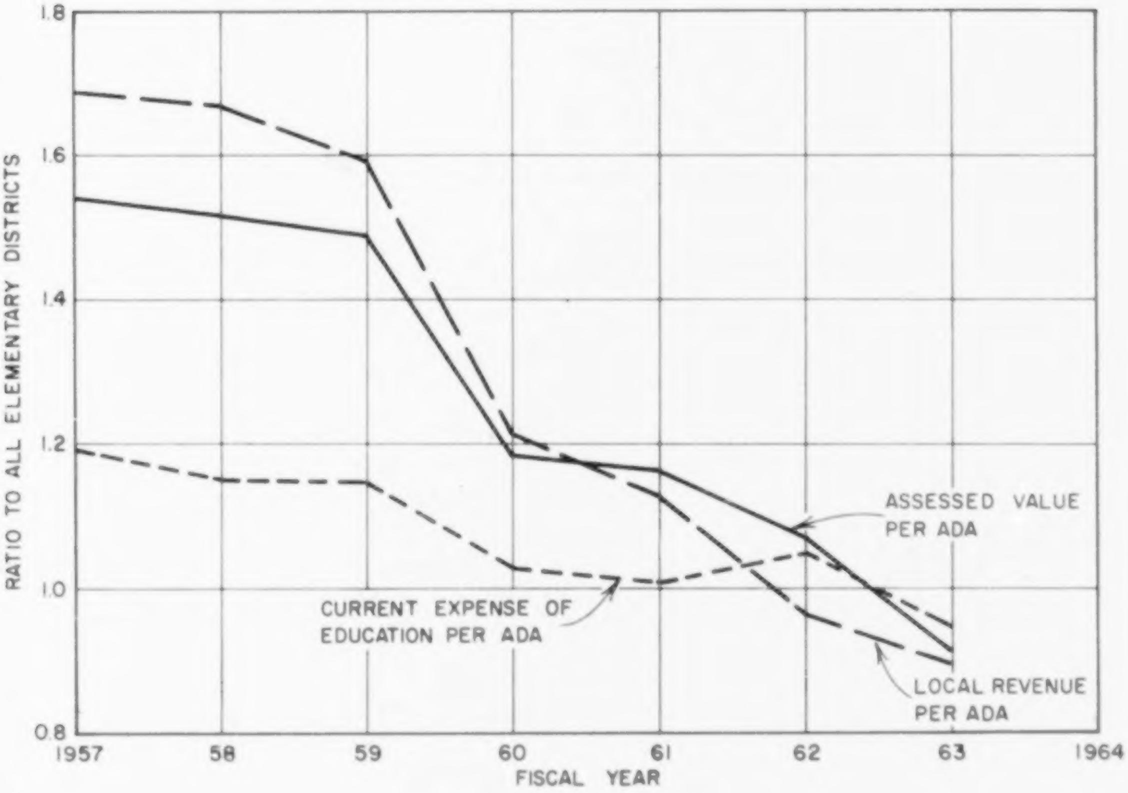

CHART 10

SELECTED VARIABLES AS RATIOS OF TOTALS FOR ALL ELEMENTARY DISTRICTS
(Excluding Los Angeles)
SAN MIGUEL ELEMENTARY DISTRICT
FISCAL YEARS 1957–1963

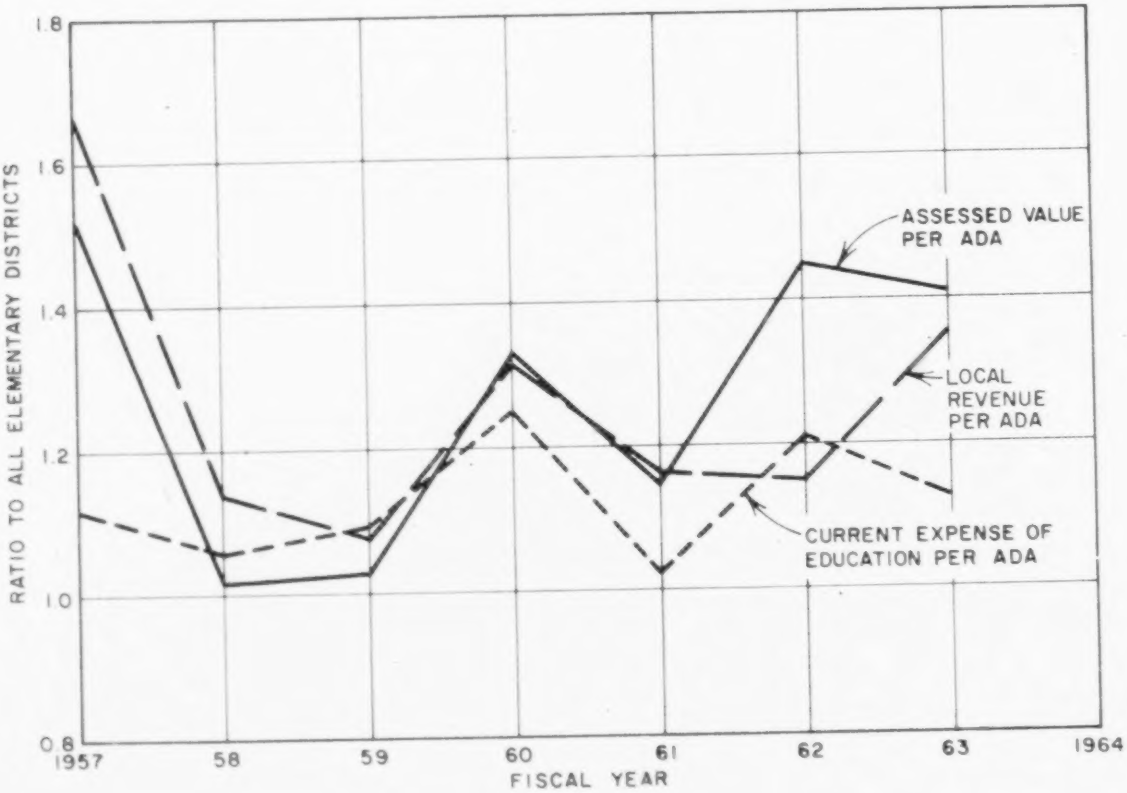

CHART 11

DISTRICT ASSESSED VALUE PER ADA AS A RATIO OF TOTAL FOR ALL ELEMENTARY DISTRICTS (Excluding Los Angeles)
SELECTED ELEMENTARY DISTRICTS
FISCAL YEARS 1957–1963

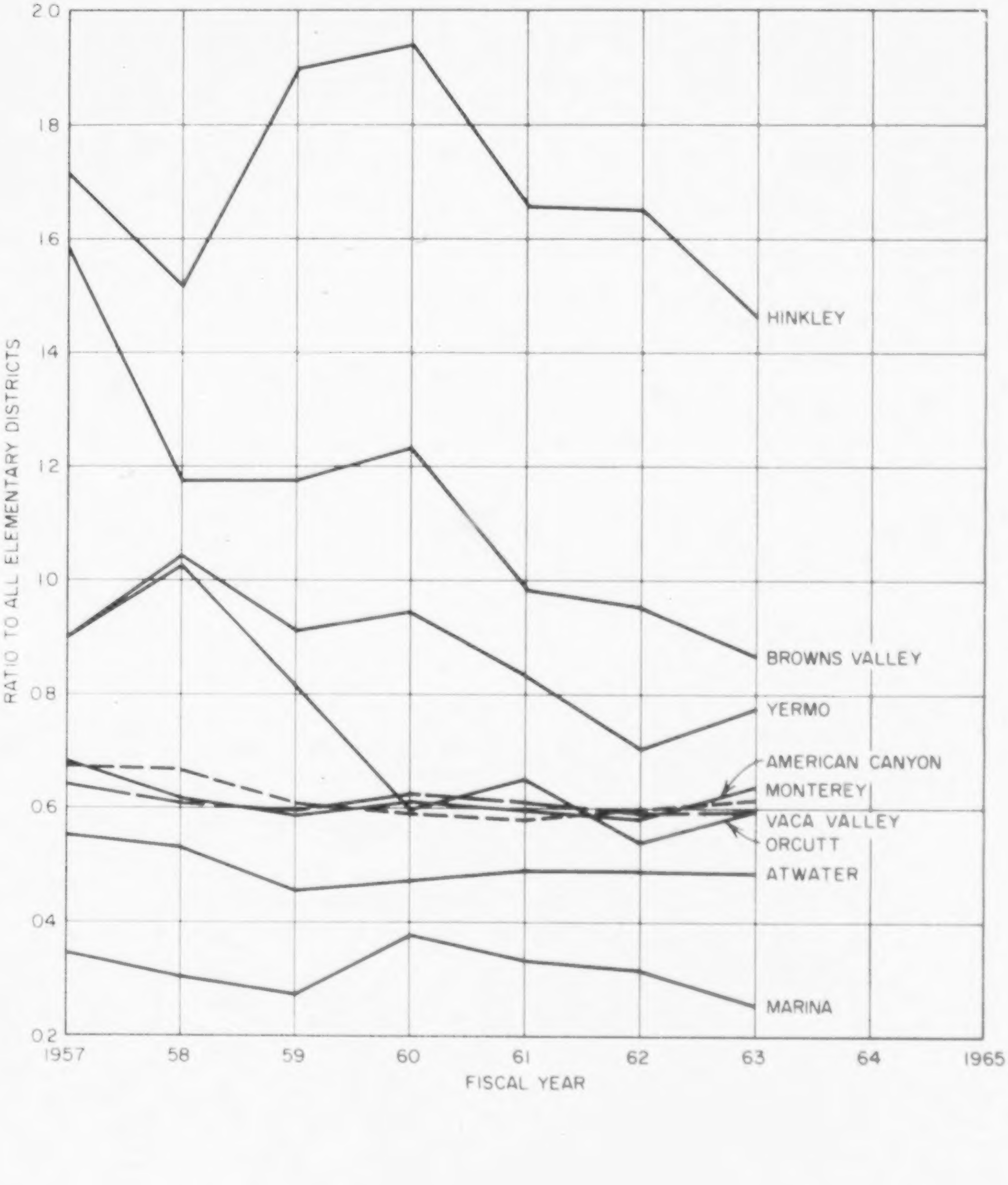

CHART 12

DISTRICT ASSESSED VALUE PER ADA AS A RATIO OF TOTAL FOR ALL HIGH SCHOOL DISTRICTS (Excluding Los Angeles)
SELECTED HIGH SCHOOL DISTRICTS
FISCAL YEARS 1957–1963

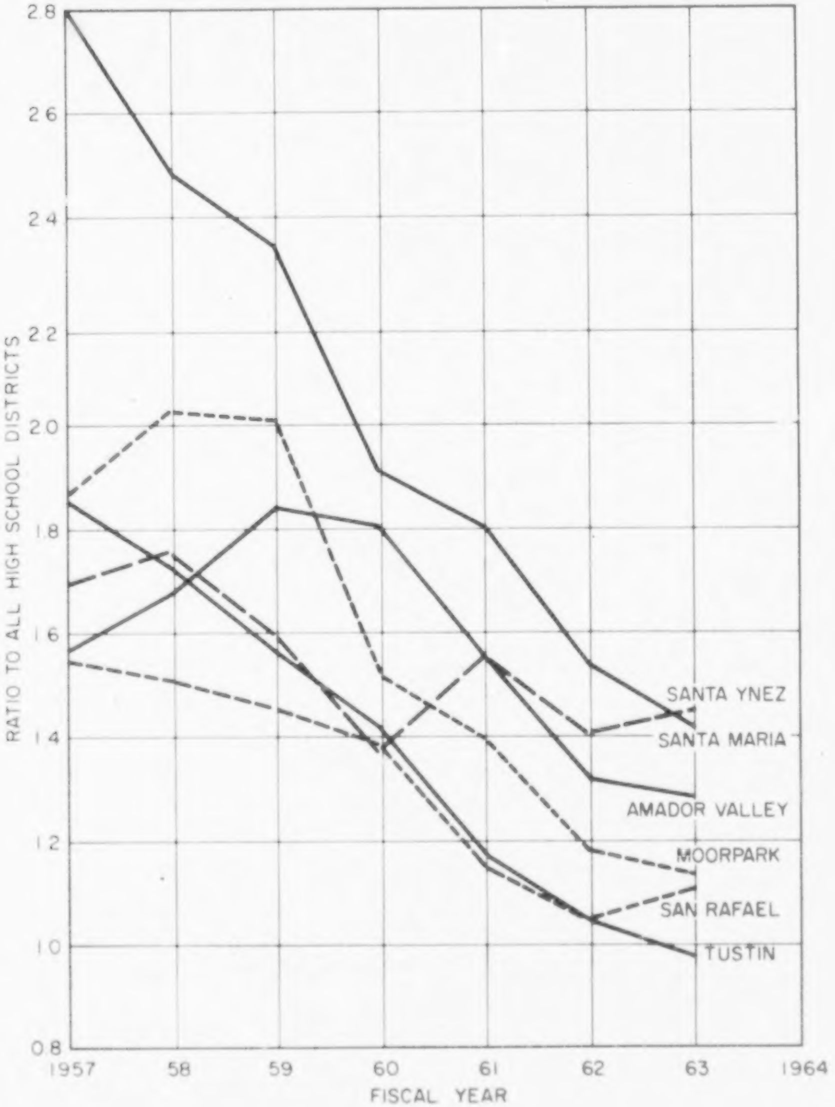

CHART 13

DISTRICT ASSESSED VALUE PER ADA AS A RATIO OF TOTAL FOR ALL HIGH SCHOOL DISTRICTS (Excluding Los Angeles)
SELECTED HIGH SCHOOL DISTRICTS
FISCAL YEARS 1957–1963

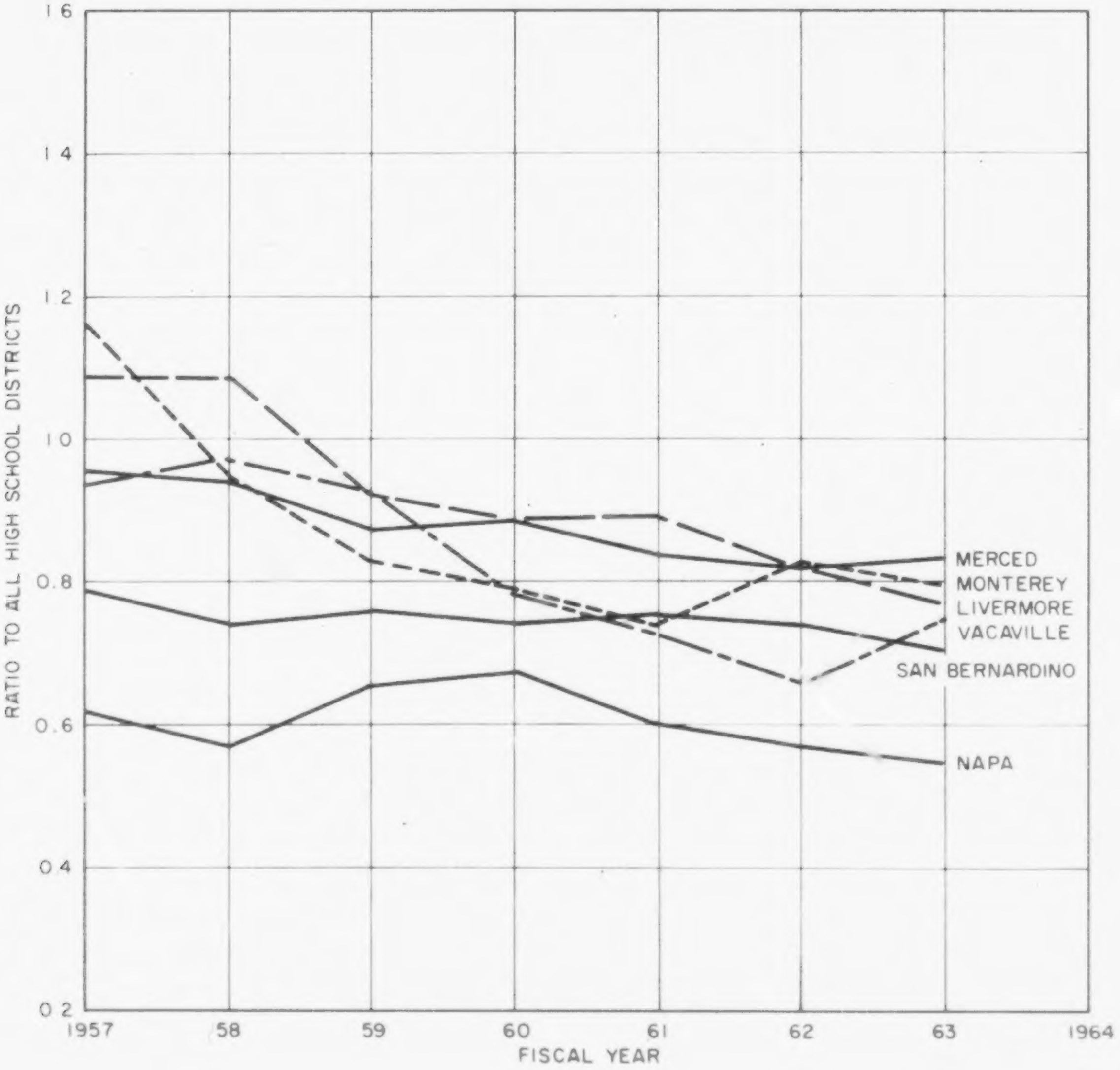

CHART 14

DISTRICT LOCAL REVENUES PER ADA AS A RATIO OF TOTAL FOR ALL ELEMENTARY DISTRICTS (Excluding Los Angeles)
SELECTED ELEMENTARY DISTRICTS
FISCAL YEARS 1957–1963

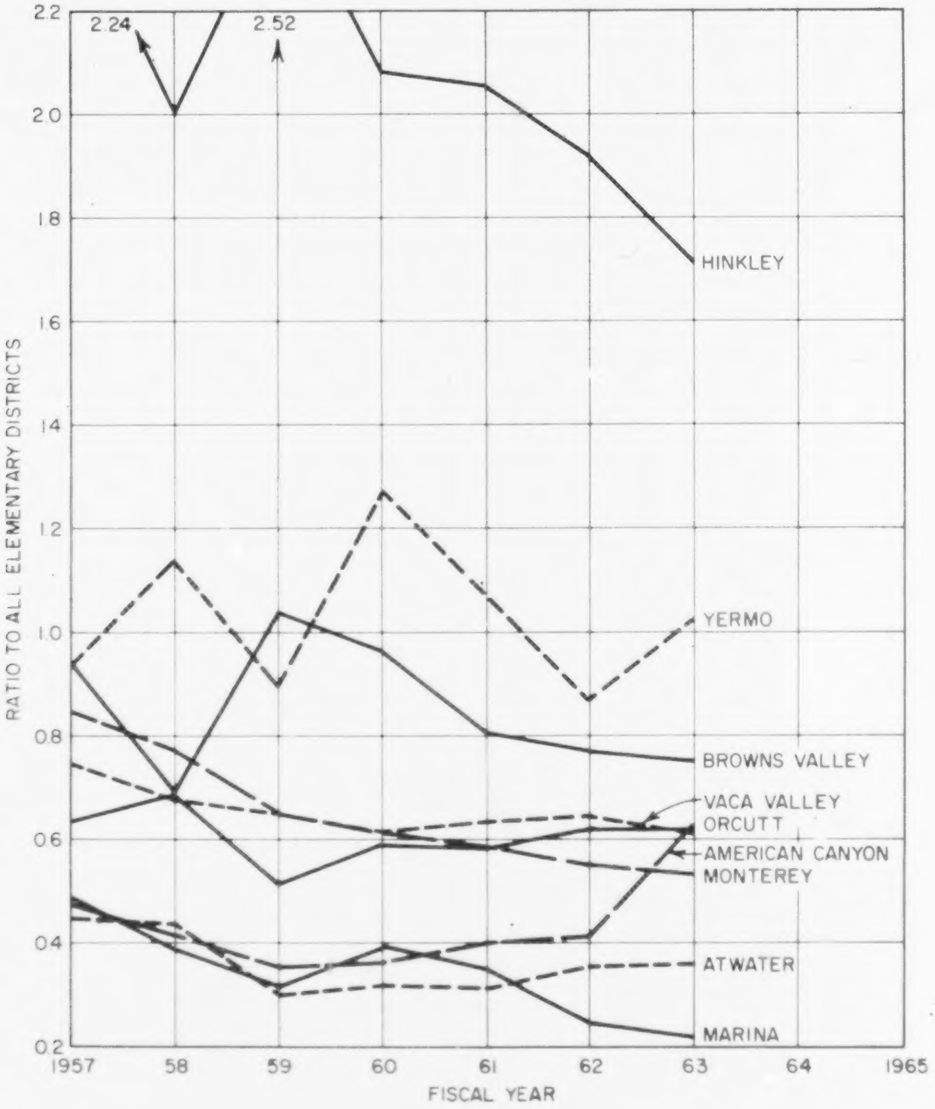

CHART 15

DISTRICT LOCAL REVENUES PER ADA AS A RATIO OF TOTAL FOR ALL HIGH SCHOOL DISTRICTS (Excluding Los Angeles)
SELECTED HIGH SCHOOL DISTRICTS
FISCAL YEARS 1957–1963

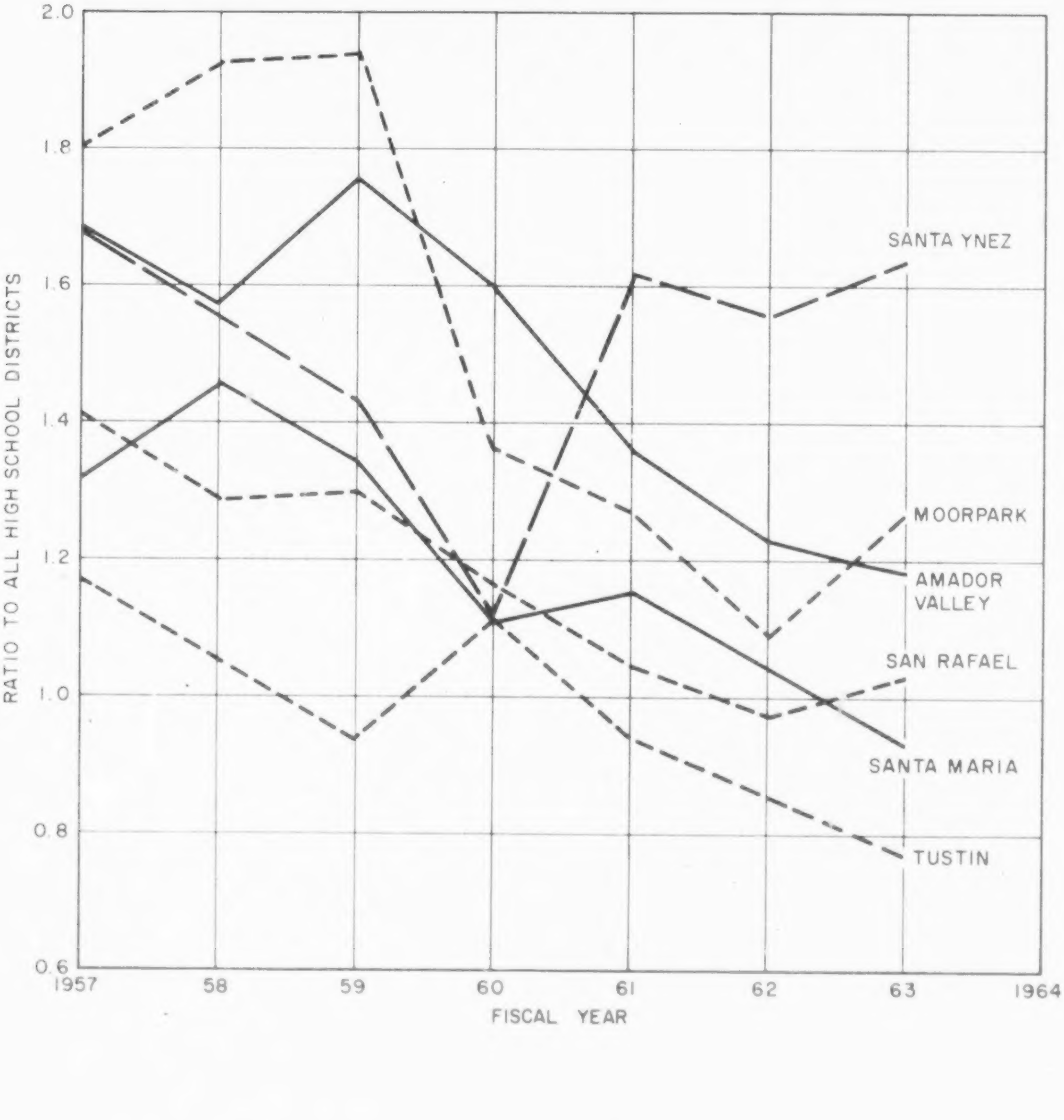

CHART 16

DISTRICT LOCAL REVENUES PER ADA AS A RATIO OF TOTAL FOR ALL
HIGH SCHOOL DISTRICTS (Excluding Los Angeles)
SELECTED HIGH SCHOOL DISTRICTS
FISCAL YEARS 1957–1963

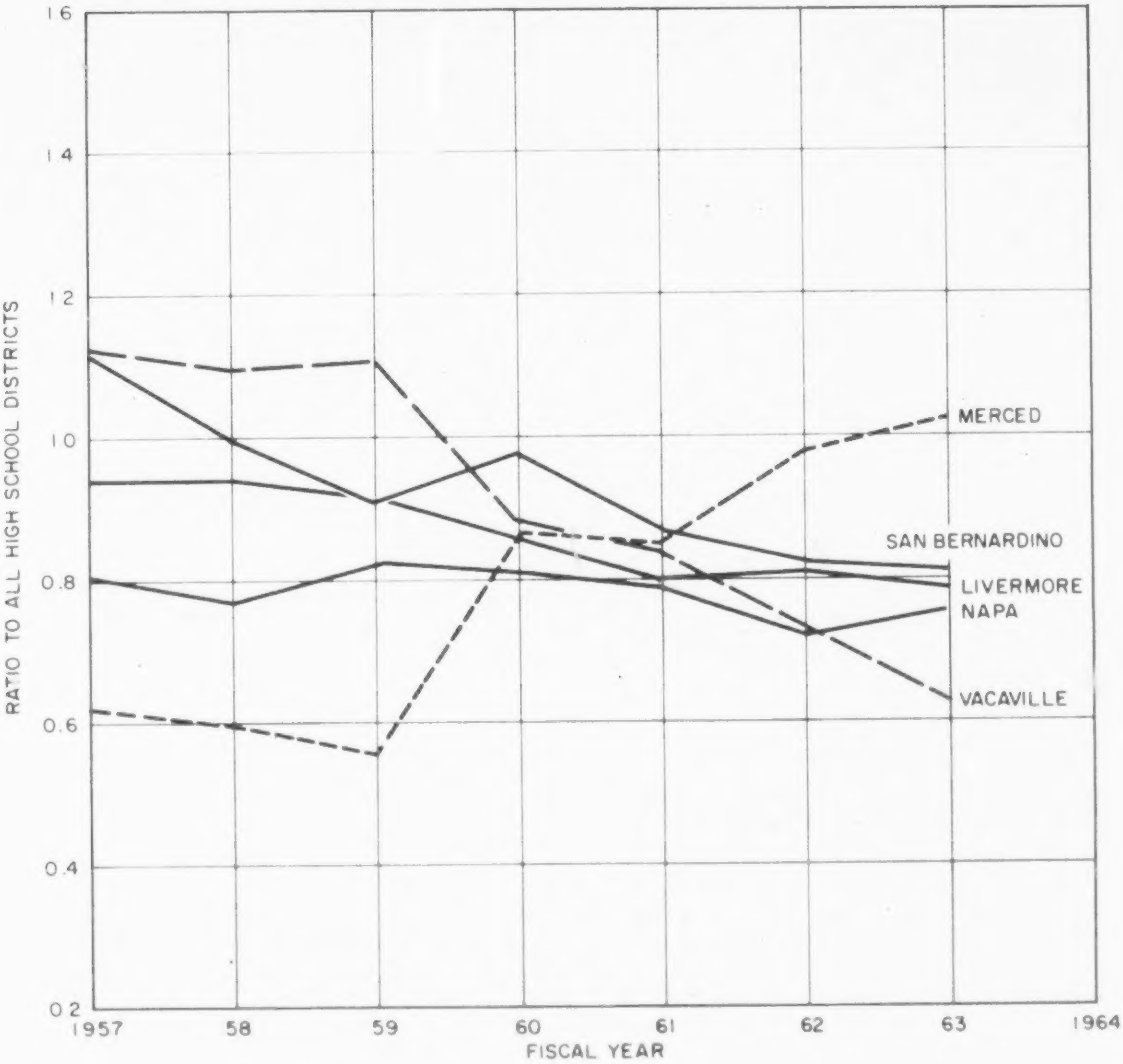

CHART 17

DISTRICT CURRENT EXPENSE OF EDUCATION PER ADA AS A RATIO OF TOTAL FOR ALL ELEMENTARY DISTRICTS (Excluding Los Angeles)
SELECTED ELEMENTARY DISTRICTS
FISCAL YEARS 1957-1963

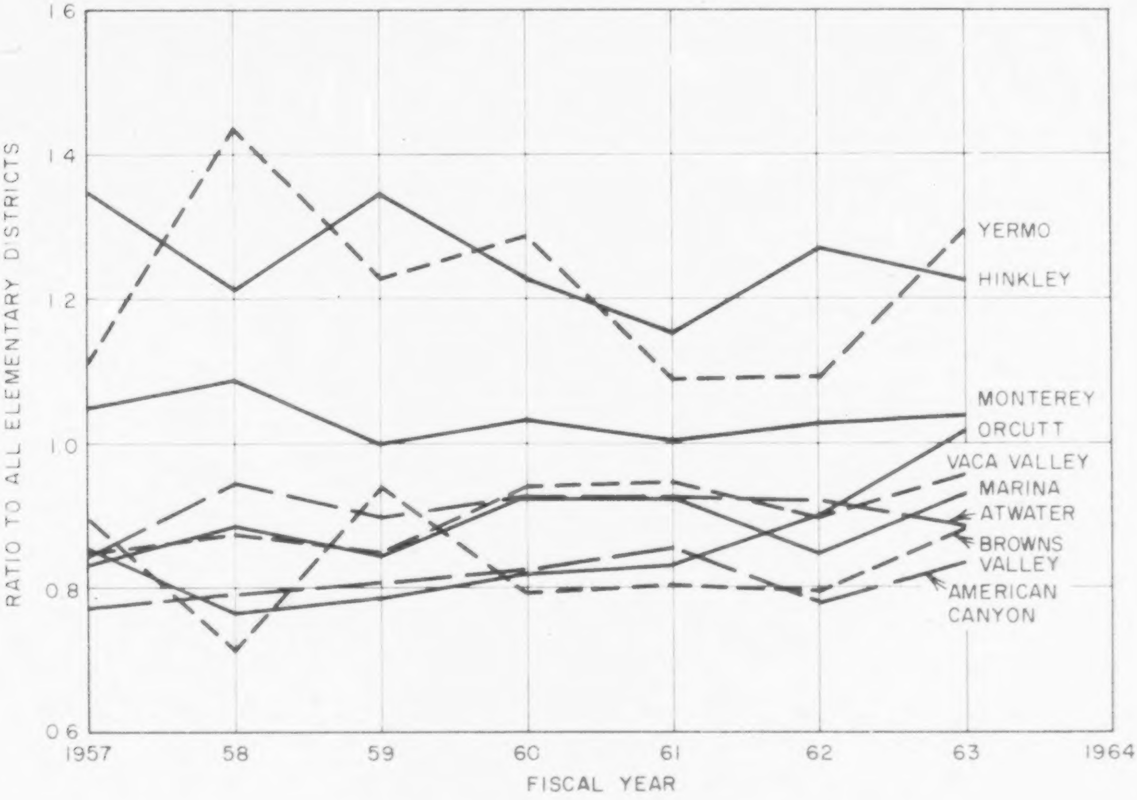

CHART 18

DISTRICT CURRENT EXPENSE OF EDUCATION PER ADA AS A RATIO OF TOTAL FOR ALL HIGH SCHOOL DISTRICTS (Excluding Los Angeles)
SELECTED HIGH SCHOOL DISTRICTS
FISCAL YEARS 1957–1963

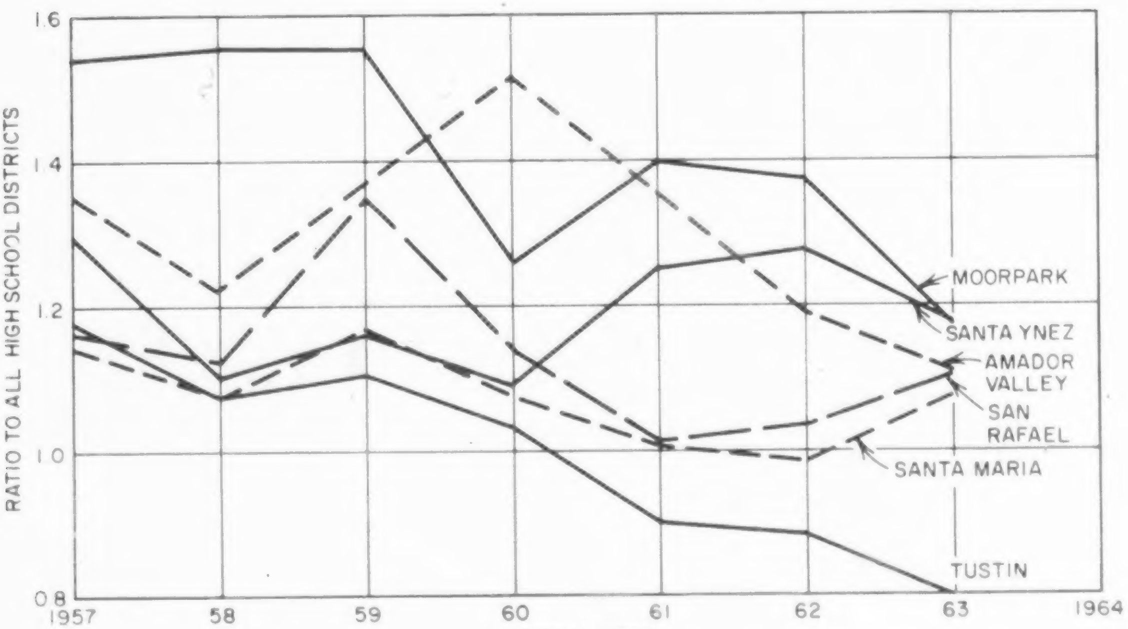

CHART 19

DISTRICT CURRENT EXPENSE OF EDUCATION PER ADA AS A RATIO OF TOTAL FOR ALL HIGH SCHOOL DISTRICTS (Excluding Los Angeles)
SELECTED HIGH SCHOOL DISTRICTS
FISCAL YEARS 1957–1963

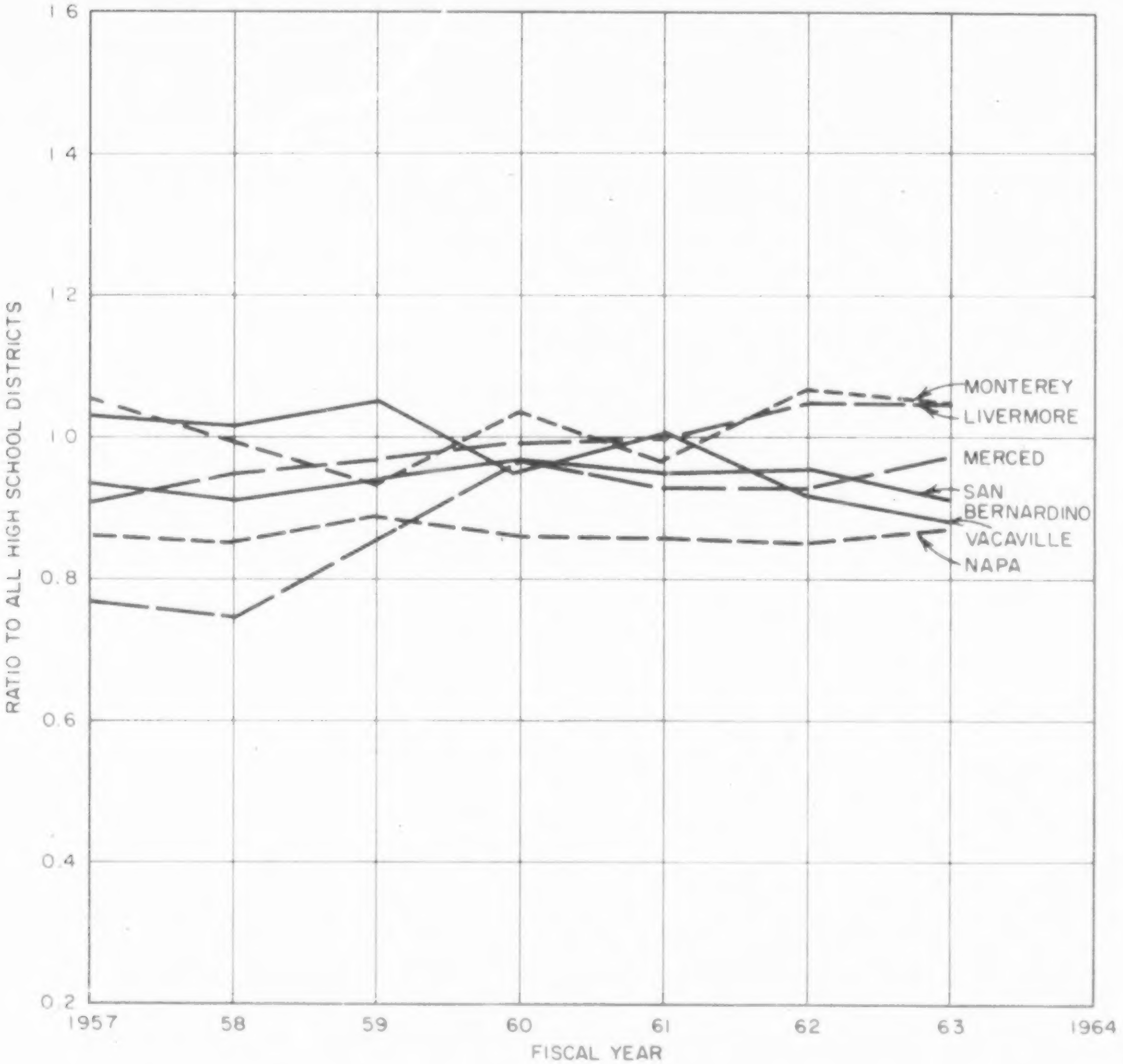

Table 27

CALIFORNIA SCHOOL DISTRICTS CLASSIFIED AS CASE I
1963

District	County	SAFA Number	Grade Span
Elementary districts			
Central	Kings	931	K-8
San Miguel	San Louis Obispo	117	K-8
Ocean View	Ventura	145	K-8
Pleasant Valley	Ventura	232	K-8
Wheatland	Yuba	189	K-8
Unified district			
Mojave	Kern	501	K-12

Table 28

SELECTED VARIABLES, WHEATLAND ELEMENTARY DISTRICT
Fiscal Years 1957-1963

Variable	1957	1958	1959	1960	1961	1962	1963
N	230	227	247	683	1,088	1,465	1,770
N_f/N	--	10.1%	14.6%	62.2%	76.2%	82.9%	85.3%
$N_{3(a)}/N$	--	--	--	51.2	69.3	75.8	81.9
V/N	$11,810	$13,693	$12,776	$5,099	$4,211	$3,644	$3,168
t_d*	1.03	1.01	1.06	1.04	1.07	1.07	1.06
L/N	123	139	133	57	46	40	36
S/N	199	156	148	187	208	207	220
F/N	--	8	13	106	141	160	177
(L + S + F)/N	322	303	294	350	395	407	433
C/N	324	287	288	278	277	300	316

* In this and following tables t_d is expressed in terms of dollars per $100 assessed value.

Table 29

SELECTED VARIABLES, MOJAVE UNIFIED DISTRICT
Fiscal Years 1957-1963

Variable	1957	1958	1959	1960	1961	1962	1963
N	903	950	906	826	840	902	979
N_f/N	38.8%	38.7%	30.0%	17.0%	16.4%	15.4%	14.9%
$N_{3(a)}/N$	10.6	10.1	3.8	--	--	--	--
V/N	$6,387	$7,074	$10,665	$16,758	$17,300	$17,023	$16,768
t_d*	3.61	3.59	3.18	2.86	3.18	3.30	3.33
L/N	234	257	347	466	534	534	542
S/N	207	207	211	185	152	143	149
F/N	40	43	45	18	19	19	17
(L + S + F)/N	481	507	603	669	705	696	708
C/N	429	478	530	609	620	653	672

Table 30

SELECTED VARIABLES, CENTRAL ELEMENTARY DISTRICT
Fiscal Years 1957-1963

Variable	1957	1958	1959	1960	1961	1962	1963
N	195	206	230	274	312	1,101	1,500
N_f/N	--	15.0%	21.3%	25.5%	32.7%	75.3%	82.2%
$N_{3(a)}/N$	--	--	--	0.7	0.6	72.3	79.5
V/N	$12,972	$12,446	$11,590	$11,053	$10,973	$3,528	$2,781
t_d*	0.91	0.91	0.98	1.16	1.25	1.35	1.16
L/N	124	120	128	137	157	49	36
S/N	184	166	172	172	190	253	230
F/N	--	12	17	24	32	151	173
(L + S + F)/N	308	298	317	333	379	453	439
C/N	328	345	311	316	333	302	340

Table 31

SELECTED VARIABLES, OCEAN VIEW ELEMENTARY DISTRICT
Fiscal Years 1957-1963

Variable	1957	1958	1959	1960	1961	1962	1963
N	296	305	617	658	680	732	898
N_f/N	23.6%	22.6%	63.4%	66.7%	64.4%	65.4%	68.1%
$N_{3(a)}/N$	6.4	5.6	52.2	56.2	55.1	56.3	58.3
V/N	$21,825	$21,898	$11,040	$10,877	$15,771	$15,853	$14,773
t_d*	1.41	1.42	1.45	1.53	0.78	1.38	1.40
L/N	319	313	163	198	138	212	207
S/N	161	161	144	174	185	146	144
F/N	23	23	100	115	116	125	135
(L + S + F)/N	503	497	407	487	439	483	486
C/N	375	395	359	384	406	438	473

Table 32

SELECTED VARIABLES, PLEASANT VALLEY ELEMENTARY DISTRICT
Fiscal Years 1957-1963

Variable	1957	1958	1959	1960	1961	1962	1963
N	744	790	853	1,175	1,506	1,865	2,386
N_f/N	21.1%	21.0%	27.9%	42.3%	42.2%	41.7%	38.7%
$N_{3(a)}/N$	--	--	0.6	20.0	18.6	14.5	15.1
V/N	$14,246	$14,563	$14,445	$11,252	$11,623	$10,784	$9,370
t_d*	1.50	1.59	1.61	1.60	1.56	1.59	1.81
L/N	216	230	234	184	188	171	169
S/N	146	136	136	156	167	174	177
F/N	16	17	25	58	59	58	52
(L + S + F)/N	378	383	395	398	414	403	398
C/N	341	358	370	347	359	387	359

Table 33

SELECTED VARIABLES, SAN MIGUEL ELEMENTARY DISTRICT
Fiscal Years 1957-1963

Variable	1957	1958	1959	1960	1961	1962	1963
N	167	223	225	178	191	172	173
N_f/N	17.4%	30.5%	34.7%	22.5%	37.6%	38.2%	37.7%
$N_{3(a)}/N$	--	--	4.0	6.2	7.9	5.2	7.4
V/N	$14,062	$9,736	$9,946	$12,661	$11,458	$14,610	$14,472
t_d*	1.47	1.56	1.64	1.58	1.62	1.31	1.61
L/N	213	157	158	200	194	205	257
S/N	130	153	193	236	197	202	173
F/N	14	25	33	61	46	45	48
(L + S + F)/N	357	335	384	497	437	452	478
C/N	320	329	353	422	364	446	426

Table 34

CALIFORNIA SCHOOL DISTRICTS CLASSIFIED AS CASE II IN WHICH V/N DECLINED RELATIVE TO THE STATE AVERAGE DURING THE PERIOD OF FISCAL YEARS 1957 THROUGH 1963

District	County	SAFA Number	Grade Span FY 1963
Elementary districts			
Atwater	Merced	131	K-8
Marina	Monterey	80	K-8
Monterey City	Monterey	1	K-6
American Canyon	Napa	256	K-6
Browns Valley	Napa	825	K-6
Hinkley Union	San Bernardino	119	K-8
Yermo	San Bernardino	88	K-8
Orcutt Union	Santa Barbara	120	K-8
Vaca Valley Union	Solano	90	K-8
High school districts			
Amador Valley Joint Union	Alameda	203	9-12
Livermore Joint Union	Alameda	109	9-12
San Rafael City	Marin	178	9-12
Merced Union	Merced	303	9-12
Monterey Union	Monterey	6	7-12
Napa Union	Napa	84	7-14
Tustin Union	Orange	409	9-12
San Bernardino City	San Bernardino	108	7-12
Santa Maria Joint Union	Santa Barbara	928	9-12
Santa Ynez Valley Union	Santa Barbara	326	9-12
Vacaville Union	Solano	91	9-12
Moorpark Memorial Union	Ventura	226	9-12
Unified districts			
Muroc	Kern	505	K-12

Table 35

CALIFORNIA SCHOOL DISTRICTS CLASSIFIED AS CASE II IN WHICH V/N INCREASED RELATIVE TO THE STATE AVERAGE DURING THE PERIOD OF FISCAL YEARS 1957 THROUGH 1963

District	County	SAFA Number	Grade Span FY 1963
Elementary districts			
Sausalito	Marin	53	K-8
Arena Union	Mendocino	841	I-8
Winton	Merced	613	K-8
Victor	San Bernardino	86	K-6
Fairfield	Solano	57	K-8
High school districts			
Roseville Joint Union	Placer	281	9-12
Redlands Joint Union	San Bernardino	143	7-12
Victor Valley Union	San Bernardino	133	7-12
Oceanside-Carlsbad Union	San Diego	40	9-12
Manteca Union	San Joaquin	122	9-12
Trinity County	Trinity	294	9-12
Unified districts			
Alameda city	Alameda	35	K-12
Vista city	San Diego	8	K-12

Table 36

SELECTED VARIABLES, MUROC UNIFIED DISTRICT
Fiscal Years 1957-1963

Variable	1957	1958	1959	1960	1961	1962	1963
N	1,633	1,835	2,062	2,370	2,726	2,839	3,007
N_f/N	67.1%	68.5%	67.3%	67.6%	70.5%	70.6%	72.7%
$N_{3(a)}/N$	57.4	57.4	54.1	57.4	63.3	63.9	65.4
V/N	$5,631	$5,994	$5,693	$5,120	$4,600	$4,515	$4,660
t_d*	2.85	2.70	2.78	2.83	2.90	2.91	2.92
L/N	165	164	165	141	135	140	139
S/N	168	184	187	202	202	211	211
F/N	86	102	119	154	146	156	156
(L + S + F)/N	419	450	471	497	483	507	506
C/N	356	404	411	486	456	501	508

Table 37

SELECTED VARIABLES, ALAMEDA UNIFIED DISTRICT
Fiscal Years 1957-1963

Variable	1957	1958	1959	1960	1961	1962	1963
N	10,207	10,171	9,873	10,071	10,354	10,411	10,538
N_f/N	31.7%	31.8%	34.3%	35.5%	36.3%	35.7%	34.9%
$N_{3(a)}/N$	4.6	5.2	5.7	6.2	6.5	6.3	6.7
V/N	$5 213	$5,188	$5,509	$5,724	$5,933	$6,046	$6,329
t_d*	1.91	3.12	3.25	3.38	3.38	3.57	3.68
L/N	115	155	183	197	205	217	243
S/N	171	192	205	201	199	210	180
F/N	28	31	38	43	47	49	50
(L + S + F)/N	314	378	426	441	451	476	473
C/N	348	374	395	431	438	462	483

Table 38

RATIO OF 1963 TO 1957 VALUES FOR SELECTED VARIABLES CASE II DISTRICTS IN WHICH V/N DECLINED RELATIVE TO THE STATE AVERAGE DURING THE PERIOD OF FISCAL YEARS 1957 THROUGH 1963

Districts	Total ADA	Nonfederal ADA	Section 3 ADA	Assessed Value
Elementary school districts				
Hinkley*	1.8	1.8	2.4	1.5
Browns Valley*	3.2	2.9	4.5	2.0
Yermo	1.4	0.6	1.9	1.4
Orcutt*†	4.2	2.4	18.6	2.6
American Canyon*	1.6	1.5	2.0	1.7
Monterey	1.4	1.3	1.5	1.4
Vaca Valley*	1.5	1.5	1.6	1.6
Atwater	1.4	1.3	1.6	1.4
Marina*	5.9	3.2	8.7	4.9
State average	1.3	n.a.	n.a.	1.4
High school districts				
Santa Maria*†	2.1	1.6	12.1	1.2
Santa Ynez Valley	1.9	1.6	4.7	1.5
Amador Valley*	2.3	2.2	2.5	1.8
Moorpark Memorial*	1.4	1.3	2.5	0.8
San Rafael	3.0	2.8	4.2	2.0
Tustin	4.1	3.9	5.5	2.1
Merced	1.6	1.4	4.4	1.4
Monterey	2.0	1.7	2.5	1.3
Livermore*	2.6	2.0	3.5	1.7
Vacaville	2.1	1.9	2.5	1.5
San Bernardino*	1.8	1.7	2.1	1.5
Napa*	1.9	1.7	2.3	1.6
State average	1.5	n.a.	n.a.	1.4

* Federal entitlement based entirely on Section 3(b).

† Ratio computed for 1958-63 because no entitlement was indicated for 1957.

Table 39

CALIFORNIA SCHOOL DISTRICTS CLASSIFIED AS CASE III IN WHICH V/N INCREASED RELATIVE TO THE STATE AVERAGE DURING THE PERIOD OF FISCAL YEARS 1957 THROUGH 1963

District	County	SAFA Number	Grade Span FY 1963
Elementary districts			
Palmdale	Los Angeles	106	K-8
Westside	Los Angeles	224	K-8
Rio Linda	Sacramento	24	K-6
Robla	Sacramento	15	K-6
Daggett	San Bernardino	101	K-8
Fallbrook	San Diego	39	K-8
Oceanside	San Diego	42	K-8
Hueneme	Ventura	2	K-8
Unified districts			
Pacific Grove	Monterey	54	K-12
Folsom	Sacramento	5	K-12
Benicia	Solano	75	K-12
Vallejo	Solano	27	K-14

Table 40

CALIFORNIA SCHOOL DISTRICTS CLASSIFIED AS CASE III IN WHICH V/N DECREASED RELATIVE TO THE STATE AVERAGE DURING THE PERIOD OF FISCAL YEARS 1957 THROUGH 1963

Districts	County	SAFA Number	Grade Span FY 1963
Elementary districts			
San Jose	Marin	207	K-8
Unified districts			
Klamath-Trinity	Humboldt	868	K-12
Novato	Marin	611	K-12
Coronado	San Diego	16	K-12
San Diego	San Diego	105	K-14

Table 41

SELECTED VARIABLES, PACIFIC GROVE UNIFIED DISTRICT
Fiscal Years 1957-1963

Variable	1957	1958	1959	1960	1961	1962	1963
N	2,655	2,879	3,057	3,278	3,366	3,411	3,421
N_f/N	27.9%	27.9%	26.6%	28.1%	27.3%	25.1%	21.8%
$N_{3(a)}/N$	--	--	0.1	0.1	0.1	0.3	0.1
V/N	$6,282	$6,380	$6,321	$6,532	$6,939	$7,230	$8,417
ι_d^*	1.85	2.35	2.40	2.40	2.39	2.42	3.01
L/N	118	151	149	158	170	177	251
S/N	164	174	177	188	194	187	179
F/N	23	25	27	31	31	33	27
(L + S + F)/N	305	350	353	377	395	397	457
C/N	295	333	340	358	377	386	452

Table 42

SELECTED VARIABLES, CORONADO UNIFIED DISTRICT
Fiscal Years 1957-1963

Variable	1957	1958	1959	1960	1961	1962	1963
N	2,817	2,944	3,197	3,380	3,164	3,505	3,495
N_f/N	72.1%	72.1%	70.2%	68.9%	67.5%	67.3%	65.7%
$N_{3(a)}/N$	--	--	1.7	1.5	1.5	1.6	1.5
V/N	$6,837	$6,761	$6,454	$6,330	$6,482	$6,281	$6,393
t_d*	1.80	1.79	2.40	2.39	2.39	2.55	2.56
L/N	136	135	153	153	157	161	166
S/N	152	151	151	167	185	182	180
F/N	59	63	72	76	78	84	83
(L + S + F)/N	347	349	376	396	420	427	429
C/N	335	354	360	365	397	421	445

Table 43

RATIO OF 1963 TO 1957 VALUES FOR SELECTED VARIABLES CASE III DISTRICTS IN WHICH V/N INCREASED RELATIVE TO THE STATE AVERAGE DURING THE PERIOD OF FISCAL YEARS 1957 THROUGH 1963

District	Total ADA	Nonfederal ADA	Section 3 ADA	Assessed Value
Elementary districts				
Palmdale	1.6	1.8	1.3	2.5
Westside	1.2	1.3	1.0	1.9
Rio Linda	2.1	2.5	1.6	3.1
Robla	1.1	1.3	0.7	1.9
Daggett	1.2	1.5	0.9	4.2
Fallbrook	1.4	1.5	1.2	1.8
Oceanside	1.5	1.6	1.4	1.8
Hueneme	2.5	3.1	2.1	3.1
State average	1.3	n.a.	n.a.	1.4
Unified districts				
Pacific Grove	1.3	1.4	1.0	1.7
Folsom	3.6	4.7	2.7	6.3
Benicia	1.1	1.3	0.8	1.3
Vallejo	1.2	1.4	1.1	1.3
State average	1.4	n.a.	n.a.	1.5

Table 44

SELECTED VARIABLES, HEAVILY IMPACTED CALIFORNIA ELEMENTARY DISTRICTS
FY 1963

Variable	San Joaquin	Adelanto	Herlong	China Lake
C/N	\$402	\$424	\$375	\$484
V/N	18,993	6,050	1,218	519
t_d*	0.96	1.35	0.90	4.25
L/N	185	91	16	23
S/N	121	184	198	291
F/N	168	166	163	195
(L + S + F)/N	474	441	377	509
N_f/N	78.7%	88.6%	95.3%	100.0%
$N_{3(a)}/N$	78.7	67.4	56.9	98.5

Table 45

FACTORS RELATING TO THE DETERMINATION OF THE OFFSET OF FEDERAL FUNDS IN SELECTED CALIFORNIA DISTRICTS

	San Joaquin	Adelanto	Herlong	China Lake
V (1961-62)	$14,130,770	$6,257,480	$ 647,150	$ 918,180
P.L. 874 Increment	4,441,239	4,605,608	3,592,920	4,119,346
Net entitlement (1962-63)	143,750	179,082	83,094	468,923
t_d (1961-62)	0.9585	1.3500	0.9000	4.2500
t_s	0.60	0.60	1.35	1.35
$.40\ t_s/t_d$	.25	.18	.60	.13

Table 46

CALIFORNIA SCHOOL DISTRICTS WITHOUT A WELL-DEFINED TREND IN THE PROPORTION OF FEDERAL TO TOTAL ADA DURING THE PERIOD OF FISCAL YEARS 1957 THROUGH 1963

District	County	SAFA Number	Grade Span FY 1963
Elementary districts			
Livermore	Alameda	116	K-8
Pleasanton Joint	Alameda	135	K-8
Seeley Union	Imperial	89	K-8
Indian Wells Valley Union	Kern	83	K-8
Lancaster	Los Angeles	113	K-8
Salvador Union	Napa	142	K-6
Shurtleff	Napa	18	K-6
Barstow Union	San Bernardino	48	K-8
Highland	San Bernardino	272	K-6
Chula Vista	San Diego	58	K-6
National	San Diego	59	K-6
South Bay Union	San Diego	74	K-6
Bayshore	San Mateo	103	K-8
Three Rivers Union	Tulare	529	K-8
High school districts			
Bishop Union	Inyo	824	9-12
Lassen Union	Lassen	98	9-14
Antelope Valley Joint Union	Los Angeles	151	9-12
Grant Union	Sacramento	36	7-12
Barstow Union	San Bernardino	49	9-12
Fallbrook Union	San Diego	32	9-12
Sweetwater Union	San Diego	81	7-12
Armijo Joint Union	Solano	96	9-12
Oxnard Union	Ventura	51	9-12

Table 47

DISTRIBUTION OF CALIFORNIA ELEMENTARY, HIGH SCHOOL, AND UNIFIED DISTRICTS, BY ASSESSED VALUE PER ADA RELATIVE TO THE STATE AVERAGE FY 1963

V/N As a Percent of The State Average	Number of Districts			
	All	Elementary	High School	Unified
Less than 20%	2	2	--	--
20-39	7	7	--	--
40-59	17	12	2	3
60-79	18	7	7	4
80-99	14	7	4	3
100-120	7	1	5	1
120-139	8	3	5	--
140% or more	12	7	4	1
Total	85	46	27	12

Table 48

DISTRIBUTION OF CALIFORNIA ELEMENTARY, HIGH SCHOOL, AND UNIFIED DISTRICTS, BY LOCAL REVENUE PER ADA RELATIVE TO THE STATE AVERAGE FY 1963

L/N As a Percent of The State Average	Number of Districts			
	All	Elementary	High School	Unified
Less than 20%	3	3	--	--
20-39	9	7	--	2
40-59	9	5	1	3
60-79	21	8	10	3
80-99	17	9	5	3
100-119	14	8	6	--
120-139	6	2	3	1
140% or more	6	4	2	--
Total	85	46	27	12

Table 49

DISTRIBUTION OF CALIFORNIA ELEMENTARY, HIGH SCHOOL, AND UNIFIED DISTRICTS, BY CURRENT EXPENSE PER ADA RELATIVE TO THE STATE AVERAGE

FY 1963

C/N as a Percent of The State Average	Number of Districts			
	All	Elementary	High School	Unified
Less than 20%				
20-39	1	1	--	--
40-59	1	1	--	--
60-79	3	1	2	--
80-99	39	22	9	8
100-120	29	14	12	3
120-139	8	6	2	--
140% or more	4	1	2	1
Total	85	46	27	12

Table 50

DISTRIBUTION OF CALIFORNIA ELEMENTARY, HIGH SCHOOL, AND UNIFIED DISTRICTS, BY TYPE OF CHANGE IN PROPORTION OF FEDERAL ADA

Fiscal Years 1957 Through 1963

Type of Change	Number of Districts			Total
	Elementary	High School	Unified	
Sudden and substantial	5	--	1	6
Upward trend				
Decreasing relative V/N	9	12	1	22
Increasing relative V/N	5	6	2	13
Downward trend				
Increasing relative V/N	8	--	4	12
Decreasing relative V/N	1	--	4	5
Relatively constant, heavily impacted	4	--	--	4
No well-defined trend	14	9	--	23
Total	46	27	12	85

* * *

Effects of Federal Entitlement on Local Fiscal Effort in Sixteen States as Shown by Mulitple Correlation Analysis

An attempt was made in this study to utilize statistical information in an econometric analysis to predict educational expenditure based on socioeconomic characteristics of all districts and on amount of P.L. 874 entitlement in federally affected districts. Multiple regressions were computed for 16 states for which the sample of both entitled and nonentitled districts was sufficiently large. The dependent variables in all cases were local revenue share of current expenses of education per pupil; the independent variables were socioeconomic variables and the proportion of pupils entitled under Sections 3(a) and 3(b) of P.L. 874.*

The addition of federally connected ADA as an independent variable in combination with a set of variables representing socioeconomic characteristics of the areas shows the direction and magnitude of the impact that federal connection has on the local share of expenses, after taking into account socioeconomic structure. The socioeconomic variables together accounted for 30 to 50% of the variation among districts in local share of expenditures, indicating that these variables leave a large proportion of the variation unexplained. Since federal ADA is only a small factor in the structure of most districts, the addition of federal ADA reduces the unexplained portion of the variation to only a small extent. With such a large portion of the variation remaining unexplained, the equations derived cannot be used as reliable estimators of local expenditures. They can, however, be used to denote the impact on expenditures of given variables, such as federal connection.

For the 16 states, the two best socioeconomic variables for each state were selected on the basis of intercorrelation analysis. These variables were combined with a third, representing federal impact. This variable was the ratio of 3(a) plus one-half 3(b) ADA to total ADA. In each case, the dependent variable was local share of current expenses per pupil. Both linear and log equations were tested. (See Table 51.) Federal connection was found to be a statistically significant variable with a 95% degree of confidence in 11 states.* In each of these states, the coefficient carries a negative sign, meaning that the federal connection is associated with reduced local effort in these 11 states (the multiple regression analysis permits no conclusions to be reached concerning the other 39 states).

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* Independent variables: population per square mile, percent in nonpublic schools, median years of education, percent of work force in white collar occupations, median family income, percent of families with income over $10,000, percent of population under 18 years, percent of nonwhite residents, percent moved into district in last 5 years, salary of beginning teacher, ratio of elementary to total ADA, (3(a) ADA + 1/2 3(b) ADA)/ADA.

Since we could not analyze assessed value and tax rates separately, it is not possible to conclude from this analysis whether the reduced effort was due to a substitution of federal for local funds, or to reduced local ability due to federal connection. It is noteworthy, however, that the negative effect is present in states that appear typically to have underpayment as well as states typically to have overpayments.

An estimate of how the federal impact depresses local effort can be had by noting the effects on the predicted values of local expenditures created by setting federal ADA at zero in districts with relatively heavy federal entitlement. The difference between the predicted local expenditure with federal ADA and the predicted value after setting federal ADA to zero is a measure of the federal impact on local expenditures in each district, assuming that the socioeconomic characteristics of the district are held constant.

The results of this analysis for selected districts in the 11 states are shown in Table 52.† In every district, local effort is considerably below what it would be in a district similar in socioeconomic characteristics, but without federal connection.

This analysis indicates that in these 11 states, federal connection is strongly associated with reduced local effort. The fact that in every case where the variable representing federal connection was statistically significant it was also negative, strongly supports that finding.

The approach and data used here were adopted from two studies of school finance using multiple regression to predict current expenses of

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* It was not significant in 5 of the 16 states--Alabama, Massachusetts, Michigan, New York and North Carolina.

† The districts shown in Table 52 had ratios of federal to total ADA with values of not less than .1 and not more than .2. They also had predicted values of the dependent variable within 10% of observed values.

Table 51

IMPACT OF FEDERAL ADA ON LOCAL SCHOOL EXPENDITURES IN 16 STATES
MULTIPLE CORRELATION ANALYSIS

State	Equation Type	Constant	Variables							r^2	F	N
			1	2*	3	4	5	6*	7*			
Alabama	log	-4.29 (1.79)		.149 (.113)		.953 (.225)			.619 (1.96)	.47	14.2	52
California	log	8.44 (1.69)					-.932 (.464)	1.07 (.279)	-2.15 (1.06)	.40	9.79	48
Connecticut	log	-.874 (1.78)				.728 (.201)		.494 (.212)	-1.33 (.598)	.36	10.9	62
Georgia	log	.320 (1.12)	.157 (.052)		1.62 (.528)				-2.58 (1.69)	.39	11.0	55
Maryland	lin	-.376 (4.37)	.640 (.445)			.037 (.009)			-438. (188.)	.63	7.99	18
Massachusetts	lin	504. (118.)				.031 (.008)	-12.2 (3.20)		141. (385.)	.40	9.21	46
Michigan	log	.626 (1.95)	.122 (.023)			.505 (.223)			-1.11 (2.16)	.44	15.3	62
Mississippi	log	3.74 (.095)	.106 (.053)	.242 (.091)					-2.17 (1.64)	.45	9.52	39
New Jersey	log	2.17 (.679)	.105 (.024)		1.41 (.279)				-3.60 (.501)	.70	39.7	55
New York	lin	223. (168.)				.063 (.014)	-9.29 (4.40)		-409. (628.)	.29	8.21	63
North Carolina	lin	-18.3 (49.6)		13.8 (4.11)			1.73 (1.21)		-222. (145.)	.22	4.09	47
Ohio	log	3.14 (.558)	.164 (.023)		.841 (.232)				-4.74 (1.08)	.57	29.2	71
Rhode Island	lin	529. (131.)					-7.17 (3.44)	81.9 (55.4)	-245. (82.0)	.53	7.52	24
South Carolina	log	-2.85 (1.55)			1.03 (.566)	.562 (.258)			-4.14 (1.25)	.47	10.2	39
Tennessee	lin	-6.71 4)	1.45 (.244)			.018 (.003)			-195. (93.3)	.70	38.9	54
Texas	log	.296. (1.44)	-.071 (.039)			.621 (.170)			-3.56 (.965)	.36	11.0	63

Columns: Dependent Variable: lin = linear
log = natural log
1 = Population (hundreds) per square mile
2 = Percent of students in nonpublic schools
3 = Median years of education
4 = Median family income ($)
5 = Percent of population under 18 years
6 = (Secondary ADA)/(total ADA)
7 = [3(a) ADA + ½ 3(b) ADA]/(total ADA)
r^2 = Coefficient of determination
F = Measure of significance
N = Number of observations
( ) = Standard deviation

One (1) added to variable in the log form.

Table 52

ESTIMATED LOCAL SHARE OF CURRENT EXPENSES INCLUDING FEDERAL ADA AND EXCLUDING FEDERAL ADA

State and District	Including Federal ADA	Excluding Federal ADA	Federal ADA/ADA
California			
920	$114	$139	9%
868	71	156	37
799	111	164	18
Connecticut			
1269	239	296	16
1230	242	283	12
1220	203	293	27
Georgia			
1451	71	82	13
1455	60	67	13
Maryland			
2813	186	245	14
2827	269	351	19
Mississippi			
3438	80	108	14
3433	76	135	26

Table 52 (concluded)

State and District	Including Federal ADA	Excluding Federal ADA	Federal ADA/ADA
New Jersey			
4372	$159	$312	19%
Ohio			
5585	207	369	12
5477	90	274	24
5446	135	242	12
Rhode Island			
6469	263	294	13
6475	212	250	16
South Carolina			
6583	27	44	12
6571	32	78	21
6539	31	55	14
Tennessee			
6857	35	63	15
Texas			
7159	76	125	14
7105	75	130	15
7068	86	148	13

education.* Two modifications to the approach were introduced in our study. First, local revenues per pupil were substituted for current expenses of education per pupil as the dependent variable. This was done for two reasons. First, we are primarily interested in impacts on local revenues, not on total expenses; second, we believe that the socioeconomic characteristics of an area should be related mostly to local revenues. The other portion of costs are primarily state aid. State aid is typically either a flat sum per pupil (or per classroom) or is equalization aid. In the former case, it is not influenced by local socioeconomic structure, and in the latter case, it operates to counterbalance the effects of local socioeconomic structure. Thus, state aid payments should not be included as part of the dependent variable. The second modification was to omit assessed value per pupil (or per capita) as an independent variable in the regression for local revenues. This is essential for two reasons: (1) since it is to be expected that federal connection negatively influences assessed values per pupil, having both as independent variables will make it impossible to distinguish the true effect of federal connection on local revenues; (2) it is erroneous to include assessed value as an independent variable in the calculation of local revenues per pupil since assessed value is a component of local revenues and not an independent socioeconomic characteristic (i.e., $L = tV$ where L is local revenue; t, the tax rate; and V is assessed value). Including assessed value as an independent variable is tantamount to having the remaining independent variables determine merely the tax rate, given assessed value. This is acceptable, but is far less than claimed for the equation, that is, as a predictor of local revenues given only socioeconomic structure.

In general, the results of the econometric analyses were disappointing, lending only general confirmation to the hypothesis that federal connection negatively influences local ability to provide education.

* * *

Evidence of Federal Effects on School District Performance

Evidence concerning the use of P.L. 874 funds and the changes wrought by federal connection on school programs is available from our five case studies. In Montgomery County, the big increase in funds occurred after the law was amended in 1953 to provide payment for out-of-state commuting. In that year, there was some reduction in the local tax rate, and no particular evidence of special use of the additional P.L. 874 funds. In general, Montgomery County is so overwhelmingly influenced and historically molded by federal connection, that it is impossible to determine any special use of P.L. 874 funds, or special federal effects. Suffice it to say that Montgomery County is the residence of well-educated, high-income people with high aspirations for their children. Thus, they spend a great deal on education. This was true both before and after arrival of P.L. 874.

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* J. Miner, Social and Economic Factors in Spending for Public Education, Syracuse University Press, 1963; and H. T. James, and others, Wealth, Expenditures, and Decision-Making for Education, Stanford University Press, 1963.

In Philadelphia, $2 million of P.L. 874 funds is too small a proportion of total expenditures to make any major impact. In the first year the funds were obtained, they were used directly for the purchase of needed equipment. In later years, they were merged with the general funds, and appear to have been used to help increase teacher salaries.

In Vallejo, the federal funds when first received were directed to raising salaries. In 1950, Vallejo was in a serious financial position--salaries considerably below the state average, pupil/teacher ratio above the state ratio, and financial balances very low. P.L. 874 funds clearly have led to an improvement in this situation, with salaries and financial balances especially showing considerable improvement. Federal connection in Vallejo is associated with the industrial characteristics created in the city. School expenditures are kept at levels associated with only modest aspirations. Local effort is geared to the level of support from other sources, consistent with maintaining approximately average levels of state expenditure on education.

In Salina, Kansas, P.L. 874 funds entered the general revenues. Expenses of education per pupil increased in Salina, but not as rapidly as did those of other first-class cities in Kansas, with which Salina is grouped for payment under P.L. 874. Since local revenues per pupil increased at a pace consistent with that of other Kansas cities, it indicates that P.L. 874 funds were somewhat less than adequate to fill the gap. No major changes occurred in the elementary school program, though expansion permitted the use of more new equipment and buildings. The high school curriculum was broadened, especially in the fields of foreign language and mathematics. In general, however, the pupil/teacher ratio, indicative of overall performance, rose somewhat in response to rising school population, returning to the 1950 level in 1963.

The environment of Brevard County, Florida, has been radically changed from rural to urban by the federal developments in that area. Expenditures on education rose from 1951 to 1961 much faster than did the average for Florida, and the curriculum changed substantially to meet the needs of a higher proportion of college aspirants.

Local fiscal effort rose in Brevard County to accommodate the rapidly increasing enrollment and the rise in per pupil costs. There is no single item of expenditure that can be attributed to the federal funds, although it is evident that these funds, in combination with reasonable local effort, accomplished the task of maintaining and improving a school system under the impact of rapid growth.

Brevard County is an example of an area radically changed by federal impact, where educational aspirations of the community have been altered. For the most part, however, federal impact is imposed upon an existing community, with aspiration levels of its own, not readily influenced by federal activity. Besides--unlike the Washington, D.C. area, Brevard County, or Huntsville, Alabama--most of the federal activities do not cause radical departure from the aspiration levels of the community.

In an analysis of a national sample of 800 high schools, Professor John Dailey of George Washington University, found no relationship between level of entitlement and student achievement. He did find, however, that entitlements tended to go to districts with "unfavorable community environment." See his study printed as Appendix G of this report.

Chapter 6

STATE AID AND THE OFFSET OF FEDERAL FUNDS

Methods and Extent of Federal Fund Offsetting

Fifteen states in the United States take P.L. 874 funds into account in determining state aid to local school districts.* P.L. 874 funds are offset in whole or in part by reducing the state aid that would otherwise be provided to a district. In no case do states actually require local districts to remit such funds to the state. Fourteen of the states that reduce aid to local districts have equalization programs.† Moreover, some districts receiving only basic aid (aid unrelated to fiscal ability) in these states have P.L. 874 funds offset up to the amount of equalization aid that they would have received if there had been no offset.

The procedures followed in offsetting vary greatly from state to state. In part, these variations are due to different forms of equalization aid, and in part to different methods of treating district receipts for federal funds. The first source of variation was analyzed by reference to Burkhead; the three forms of equalization aid are: (1) the fixed unit equalizing grant; (2) the variable unit equalizing grant; and (3) the percentage (of cost) equalizing grant.‡

The first two methods provide no essential difference for calculation or justification of offsetting and will be discussed together. The third method is essentially different, and will be discussed separately. It is employed by only three of the offsetting states--New York, Rhode Island, and Wisconsin.

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* Alaska, California, Maine, Nevada, New York, Oregon, Rhode Island, South Dakota, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming; the fifteenth offsetting state is Hawaii, which has a single district and will not be discussed further. Montana requires that the aid be substituted for local effort.

† Equalization aid is aid that varies inversely with a district's ability to finance education from local revenue sources.

‡ J. Burkhead, Public School Finance, Syracuse University, 1964, Ch. IX, "State Aid Patterns," pp. 205-235.

The form of computation and the method of treating federal funds are set forth below, with states grouped according to the form of equalization; the variations in treatment of federal funds are shown as percentages of the federal funds deducted. The first group of states uses a fixed or variable unit equalizing grant and offsets a fixed part of the federal funds by subtracting these funds from the foundation program:[*]

Alaska[†]

$$E^V N_i - t_s V_i - .5F_i = S_i; \quad S_i \geq B_i$$

Oregon

$$EN_i - t_s V_i - .75F_i = S_i; \quad S_i \geq B_i$$

South Dakota[‡]

$$(EN_i - t_s V_i - F_i - B_i)\, k = S_i; \quad S_i \geq B_i$$

Vermont[§]

$$(EN_i - t_s V_i - F_i)\, k = S_i'$$

$$\frac{S_i^{t-1} + S_i'}{2} = S_i^t \text{ with } S_i^t \geq S_i^{t-1} \quad t = \text{time in years}$$

Virginia

$$E^V N_i - t_s V_i - F_i = S_i; \quad S_i \geq B_i$$

Washington

$$EN_i - t_s V_i - .31F_i = S_i; \quad S_i \geq B_i$$

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[*] Although the formula calls for offsetting a fixed proportion of F, the proportion actually offset will vary, because no offsetting occurs once all the equalization aid has been fully offset. (See discussion below of Virginia.)

[†] See symbols at beginning of report.

[‡] "k" was 0.11 in 1962-63.

[§] "k" was .716 in 1963-64. There is an escalation feature in that the average of entitlement for the current year and the previous year cannot be less than the previous year's entitlement.

by capitalizing a portion of the federal payment and adding this to local property values:

California*

$$EN_i - t_s (V_i + .4F_i/t_i) = S_i; \quad S_i \geq B$$

Utah*

$$EN_i - t_s (V_i + .5F_i/t_i) = S_i$$

$$.5t_s/t_i \geq .5t_s/t_i \text{ (1959-60)}$$

A fourth group of states equalize on the basis of a proportion of the actual current expenses of education incurred by a district. In these states the federal funds are deducted from costs before computation of aid.

New York†

$$C_i' = C_i - (F_i + U_i)$$

$$C_i' (1 - xv_i/v) = S_i; \quad S_i \geq B_i$$

$$C_i' \leq K$$

Rhode Island‡

$$\frac{EN_i - t_sV_i}{EN_i} = k_i$$

$$\left[C_i - (F_i + U_i)\right] \quad (1 - k_i) = S_i ; (1 - k_i) \geq b$$

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* The proportion of federal funds deducted is less than the stipulated ratios of .4 and .5 by the ratio of t_s/t_i.

† C is current expenses of education; U is receipts allocable to current operation, other than state or federal funds; C' is allowable costs after deducting federal funds and other receipts; K is the level of foundation support, currently $500 per pupil; x is a proportioning factor, currently 0.510; v_i/v is the ratio of district market value of taxable property per pupil to the state average, currently set at $28,300.

‡ b is the ratio for basic support, currently 0.30.

Wyoming[*]

$$EN_i - t_sV_i - 2/3F_i = S_i$$

A second group of states has fixed or variable unit equalization programs, but offsets varying proportions of funds under P.L. 874:

Maine[†]

$$(EN_i - F_i)\, x_i k_i = S_i$$

$$x_i \sim N_i/V_i; \quad .18 \le x_i \le .66$$

$k_i = (L_i + S_i) / (EN_i - F)$, where $k \le 1$

if $k_i > 1$, then following formula used,

$$(EN_i - F)\, x_i + .1\, x_i \left((L_i + S_i) - (EN_i - F_i)\right) = S_i$$

(note: L_i is local revenue)

Nevada[‡]

$$E^V N_i - t_sV_i - kF_i = S; \quad S_i \ge B_i$$

$$k \sim V_i/N_i/V/N$$

A third group of states have fixed or variable unit equalization programs, and offset varying proportions of funds under P.L. 874, as in group two. This group differs from group two in that offsetting is done

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[*] A new procedure is being adopted in 1964-65 in which a variable proportion of federal funds are being deducted, equal to the ratio of the stipulated to the actual district tax rate. This procedure is essentially that used now in California and Utah. It is estimated that the proportion of P.L. 874 funds deducted in Wyoming will decline from 66% at present to 41%.

[†] The proportion of F deducted is a variable, dependent upon the values of x and k, with a maximum of 66%.

[‡] The basic program (B) is a variable, depending upon the number of certified teachers in the district. k varies between zero (when district assessed value per pupil is less than 30% of the state average) to .35 (when district assessed value per pupil is more than 90% of the state average). Thus, not more than 35% of F is offset.

Wisconsin[*]

$$C_i' = C_i - (F_i + U_i)$$

$$C_i' \,/\, V_s = t_s; \quad t_s \leq t_d$$

$(V_s - V_d)\, t_s = S_i$[†]$; \; S_i \geq B_i$

The proportion of federal funds offset by decreases in state aid varies greatly from state to state, depending upon the formulas for offsetting, set forth above, and the relative importance of equalization vs basic aid. For the first group of states, the formulas would result in offset proportions varying from 11% in South Dakota to 100% in Virginia. However, only a portion of districts in these states will have the maximum offsets. Some districts receive only basic aid; for these the offsetting may be zero, if the district would not have been eligible for equalization aid even without offsetting. In 10 districts in Virginia,[‡] 5 received no equalization aid, yet there was offsetting in 3 of these 5 districts. These 3 districts would have received equalization aid, if there had been no offsetting.

In California, Oregon, Washington, and New York, the basic aid is such a high proportion of the total, that either a large portion of districts are totally unaffected by offsetting, or offsetting is reduced by the basic aid minimum. In New York, for example, P.L. 874 funds will only be deducted if costs do not exceed the foundation cost of $500 ($600, 1965 act of Legislature) per pupil. Since most of the districts in the state spend more than $500 per pupil, offsetting is ineffective. Theoretically, offsetting is most complete in Virginia, which offsets up to 100% of P.L. 874 funds. In 1964-65, however, an estimated 40% of P.L. 874 funds were offset in that state. Several large recipients of federal funds, such as Arlington County, are sufficiently wealthy so that they do not receive equalization funds with or without offsetting.

In the variable proportion procedures used for offsetting in Maine, Rhode Island, and Wisconsin, proportioning factors are not applied specifically to federal funds. Rather, they are the factors that determine the amount of equalization aid, and thus increase as the need for state aid increases. However, federal funds are deductibles to which the same proportioning factors are applied. Thus, in Maine, the proportion of federal funds deducted ranges from 18 to 66%, with the higher value applied to the districts with the lowest assessed values per pupil. In Rhode Island, the range is generally from 30 to 50%, with the same result as in Maine.

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[*] V_s is stipulated assessed value, currently $34,000 per pupil; V_d is actual district assessed values.

[†] S_i is augmented if local expenditures require a tax rate in excess of 17 mills.

[‡] See Evaluation of Offsetting in Selected Districts in Two States at the end of this chapter.

In California and Utah, 40 and 50% respectively of the federal funds are divided by the local district tax rate, the result considered as an addition to the assessed value of the district. In effect, the funds deducted for any one district will be less than 40%, since the proportion of federal funds deducted in California is .4 times the ratio of the stipulated tax rate to the district tax rate. Under the present law, this stipulated rate will be equal to or less than the actual district rate for any district receiving equalization aid.* The greater the actual rate, the lower this fraction and the smaller the federal fund offset. By this procedure, the offset is proportionately less for districts making a relatively large local effort; i.e., for districts imposing a relatively high tax rate. A more complete description of the method in California is contained in the section below.

Only one state, Nevada, assigns a specific ratio to the federal funds that varies directly with ability to pay. This factor varies between zero and .35, increasing as the ratio of district assessed value per pupil approaches the state average.

Table 53 summarizes the information for each of the offsetting states. To determine precisely the total amount of offsetting nationally would require detailed investigation of each state record. The information acquired from the states in this study permits an order-of-magnitude estimate of the proportion of federal funds offset. The 14 states offsetting some of the federal funds receive about 40% of the funds dispersed under P.L. 874 in 1962-63. About two-thirds of the districts within an offsetting state are typically affected; for these districts, about one-third of the federal funds are typically offset. Thus, it may be concluded that about 10% of the federal funds dispersed under P.L. 874, generally confined to Section 3 funds, are offset.

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* Prior to 1964, under the "alternate" program, a district rate could be, and often was, less than the stipulated rate. For these districts, deduction would exceed 40% of the federal funds.

Table 53

STATES OFFSETTING P.L. 874 FUNDS

States Including P.L. 874 Funds [illegible]d Formula	Method of Inclusion	**Est. % of Districts for Which Deduction Is Effective**	**Estimated Range of P.L. 874 Funds Offset in Affected Districts**
1. Alaska	50% of F added to local effort and subtracted from foundation program	All	50%
2. California	F multiplied by .4 the ratio of the stipulated tax rate (t_s) to the district rate (t_d)	n.a.	Up to 40%. Actual amount reduced by ratio of t_s/t_d. Total deduction about 30%
3. Maine	F subtracted from foundation program	All	Depends on percent assigned to assessed value class, 1964, from 18% for highest assessed value per pupil to 66% for lowest
4. Nevada	F multiplied by a proportioning factor (k) and subtraced from foundation program	n.a.	$0 \leq K \leq .35$, scaled in relation to ratio of district's assessed value per pupil to state average: K = 0 when ratio less than .3; K = .35 when ratio over .9
5. New York	F subtracted from costs of education	About 10%	Range from 0 for districts whose approved operating costs exceed the foundation program of $500 per ADA, to 100% for districts whose costs +F are $500 or less. Total about 10%
6. Oregon	75% of F subtracted from foundation program	About 50%	About half the districts receive only basic aid from which F is not deducted. Those under equalization lose full 75% of F
7. Rhode Island	F deducted from cost of education, the remainder is multiplied by a factor, K, to determine state aid	All	At least 30%, the minimum value of K, rising as K rises. For most districts, K will be less than 50%
8. South Dakota	F deducted from foundation program support and prorated	2/3	About 10% for districts under equalization
9. Utah	F multiplied by [illegible] the ratio of the stipulated tax rate for basic aid (t_s) to the district rate (t_d)*	All	About 25%
10. Vermont	F subtracted from foundation program times a proportioning factor (K)	All	In 1963-64 the value of K was .716; this was percent of F offset by state
11. Virginia	F subtracted from foundation program	About 3/4	100% deducted for those in equalization program; total of 40% of funds deducted
12. Washington	31% of F subtracted from foundation program	About 3/4	31% deducted for districts in equalization program
13. Wisconsin	F subtracted from cost of education; the amount deducted is $F(1 - V_d/V_s)$, where V_s is state guaranteed assessed value	About 60% of districts; 10% of enrollment	About 30% of funds deducted in those districts receiving equalization aid
14. Wyoming	2/3 of F deducted from foundation program		

* Ratio in 1963-64 not to exceed that in 1960-61.

Sources: U.S. Office of Education, Public School Finance Program, 1961-62. Letter from State Department of Education.

The Offsetting of Federal Payments in State Aid to School Districts in California

To provide a better understanding of the procedures and effects of offsetting, the system used in California is described in detail in this section. State aid to local school districts in California consists of basic and equalization aid. Basic aid is paid on the basis of $125 per pupil per year and not less than $2,400 per school district. The total state aid payment (S) is expressed as follows:

$$S = EN - t_s V; \quad S \geq B$$

Equalization aid is determined with respect to two foundation programs, the Regular Foundation Program and a more liberal Alternate Foundation Program (referred to as supplemental support under current law).* The latter program is applicable to elementary school districts with assessed valuations of less than $11,000 per pupil, and high school districts with assessed valuations of less than $25,000 per pupil. The regular program results in equalization aid for elementary districts of more than 100 ADA with assessed valuations ranging from $11,000 to $19,000; the range for high schools with 301 ADA or more is $25,000 to $40,800. The upper limits of $19,000 to $40,800 are the points at which state equalization aid reaches zero. Special foundation programs are provided for elementary school districts with ADA's of 100 or less, and for high schools with ADA's of 300 or less.

Regular Foundation Program

The dollar amounts defining the foundation programs and the stipulated tax rates under current law are as follows:

District	Amounts per ADA	Stipulated Tax Rate
Elementary (101-900 ADA)	$229	.0060
Elementary (over 900 ADA)	239	.0060
High School (over 300 ADA)	329	.0050
Junior College	570	.0025

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* The specifics of the change from the alternate to the supplemental support program are described below.

For an elementary district with $N = 1{,}000$, and $V/N = \$12{,}000$, the formula operates as follows:

$$S = \$239\ (1{,}000) - .0060(\$12{,}000)(1{,}000)$$

$$= \$239{,}000 - \$72{,}000 = \$167{,}000$$

$$S/N = \$167$$

If V/N had been \$19,000 or higher, the calculated value of S would have been \$114,000 and state aid would have been reduced to the basic aid of \$125 per pupil.

Supplemental Support (Formerly Alternative Program)

For elementary districts with V/N less than \$11,000, the foundation program is increased by \$1.10 per pupil for each 1 mill increase in the tax rate (above .0060) up to a maximum of \$321.50 with a tax rate of .0135. In the case of high school districts with V/N less than \$25,000, the increase for each 1 mill increase in tax rate (above .0050) is \$2.50 up to a maximum of \$416.50 with a tax rate of .0085.*

Assuming, for an elementary district, $t_d = t_s = .0135$; $N = 1{,}000$; and $V/N = \$8{,}000$, the formula operates as follows:

$$S = \$321.50\ (1{,}000) - .0135(8{,}000)(1{,}000)$$

$$= \$196{,}500 - \$321{,}500 - \$108{,}000 = \$213{,}500$$

$$S/N = \$215.50, \text{ including equalization aid of } \$88.50$$

Effect of Federal Payments to Districts Under P.L. 874

An addition to district ADA because of federal activities may result in a decrease of V/N. This would be the case for Section 3(a) pupils, since no assessed value can be attributed to them.

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* Prior to fiscal 1964, the alternate program was based on a tax rate of .0135 or .0085, and applied to all districts with low V/N and tax rates in excess of the stipulated rates of .0060 or .0050. The impact of the new approach on the offset provisions of the state aid program is discussed later.

The effect of Section 3(b) pupils on V/N will depend upon the characteristics of existing assessed value. If the district tax base were entirely residential housing and the income and family size characteristics of the federal families were similar to those of other residents of the district, V/N could be expected to remain unchanged. If other sources of assessed value were important, the effect of additional Section 3(b) pupils would be to reduce V/N.

In general, a reduction in V/N can be expected. The magnitude of the impact will depend upon the relative size of the entitled ADA, the proportion of 3(a) and 3(b) pupils, and the characteristics of the local tax base.

Within the limits indicated above for payment of state equalization aid, a reduction in V/N would result in increased state aid if no offsetting feature were built into the state aid formula. In California, a portion of the federal funds received is converted into an imputed assessed value which is then added to the existing equalized assessed value prior to computation of district aid (required local tax effort).

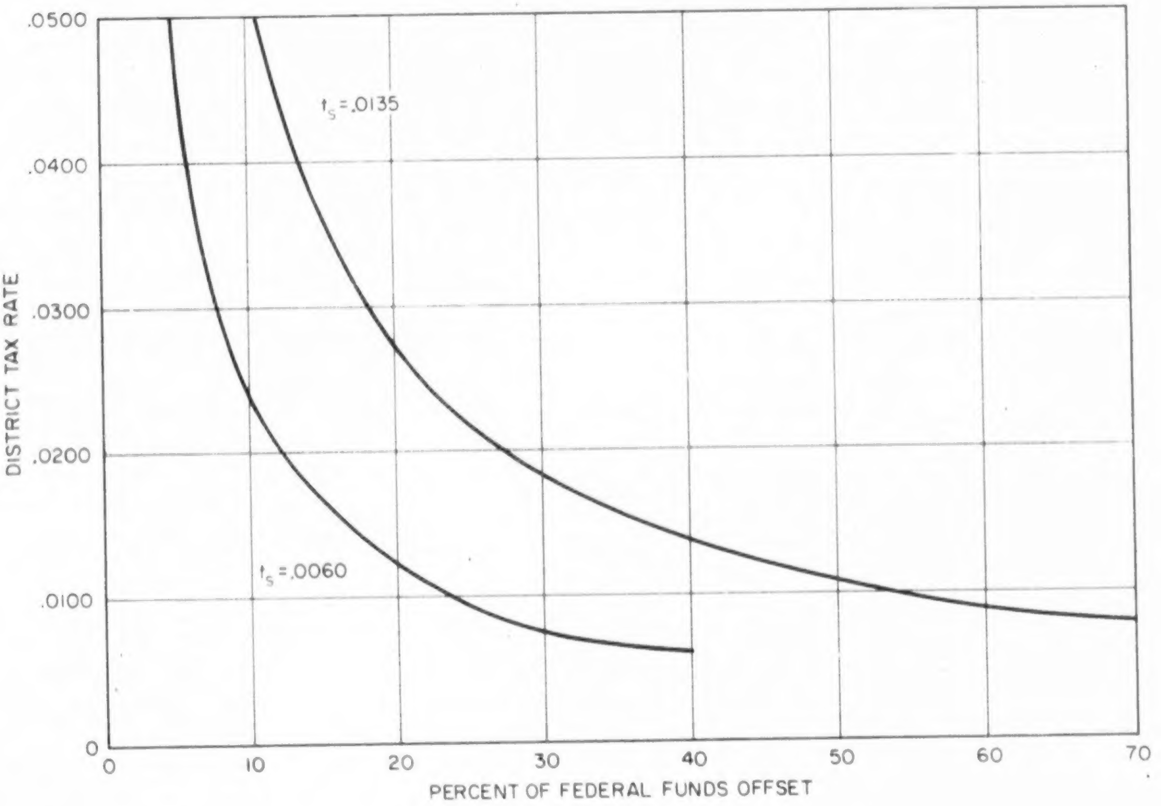
Specifically, 40% of the entitlement of federal aid under Section 3 of P.L. 874, as estimated by the U.S. Commissioner of Education, is divided by the tax rate of the district to determine a "computed increment" to assessed value. The tax rate employed is specified in the Education Code (Section 17604) and reflects the sum of the rates levied for purposes related to current expense of education (rates levied for capital purposes are excluded). For any district, therefore, the proportion of federal funds deducted from equalization aid is $.4t_s/t_d$.

This procedure results in relatively higher offsets for districts with low tax rates than for districts with high tax rates, and for districts for which $t_s = .0135$ than for those for which $t_s = .0060$. The relationships are shown in Chart 20. Thus, for an offset of 25% of federal funds a tax effort of .0216 is required of districts for which $t_s = .0135$, as compared to .0096 for districts operating at the .0060 rate. Expressing it another way, a tax rate of .0100 implies an offset of 54% for districts with $t_s = .0135$, and 24% for districts with $t_s = .0060$ rate.

The shift from an alternate program to a supplementary support program (effective in fiscal year 1964) will reduce the maximum offset to 40% of federal entitlement because $t_s = t_d$ for all t_d between .0060 and .0135. For $t_d > .0135$ (or .0060 in the case of the regular program) the curve remains unchanged.

CHART 20

RELATIONSHIP BETWEEN THE PERCENT OF FEDERAL FUNDS OFFSET AND DISTRICT TAX RATE (t_d) FOR ELEMENTARY DISTRICTS WITH t_s = .0060 AND t_s = .0135, 1962–63



Since elementary districts employing the alternate program in 1963 were characterized by assessed values per ADA of less than $10,000, it is logical to assume that a higher proportion of federal funds will be offset in low wealth districts (measured in terms of assessed value per ADA) than in high wealth districts. However, since tax rates tend to decline as V/N increases it is not clear that there will be an overall negative relationship between percent of federal funds offset and wealth.

Figure 7 shows the relationship between the percent of federal funds offset in 1962-63 and assessed value per ADA in 1962-63 for elementary school districts in which federal entitlement constituted 10% or more of the current expense of education. As expected, the offset was relatively larger for low wealth districts than for high wealth districts. However, for districts employing the .0060 rate there was no relationship between V/N and $.4t_s/t_d$; for districts at the .0135 rate, there appeared to be only a slight negative relationship.

The effect of the change from an alternate to a supplementary support program, as indicated above, is to limit the maximum offset to 40%. Under this program, therefore, there would appear to be no relationship or only slight relationship between V/N and $.4t_s/t_d$ for districts at the .0135 rate. In other words, the major cause of differences in the relative amount of offset associated with wealth is the apportionment formula.

Similar conclusions result from analysis of high school and unified districts. Figures 8 and 9 show the relationship between V/N and $.4t_s/t_d$ for these types of districts where federal entitlement constituted 5% or more of current expense of education. In the case of high school districts, no relationship was evident. However, only 2 of the districts employed the .0085 rate. In the case of unified districts, the negative relationship again appeared to result primarily from the applicable apportionment formula. The effect of the formula is more varied in unified districts than in elementary and high school districts considered separately, since the alternate program is available to both elementary and high schools in the unified district.

The official position of the State Department of Education is that, instead of determining an assessed value increment that is a function of the local tax rate, each dollar of federal funds received should represent the same amount of assessed value in each district. However, at this point, a change of the type advocated by the Department would cause substantial shifts in funds among individual districts, and from high and unified districts, as a group, to elementary school districts. The average offset for the elementary districts included in this study was 32% of federal entitlement. On the other hand, about 23% of the federal

FIGURE 7

RELATIONSHIP BETWEEN THE PROPORTION OF FEDERAL FUNDS OFFSET AND ASSESSED VALUE PER ADA IN ELEMENTARY SCHOOL DISTRICTS WITH FEDERAL ENTITLEMENT OF 10 PERCENT OR MORE OF CURRENT EXPENSE OF EDUCATION, 1962-63

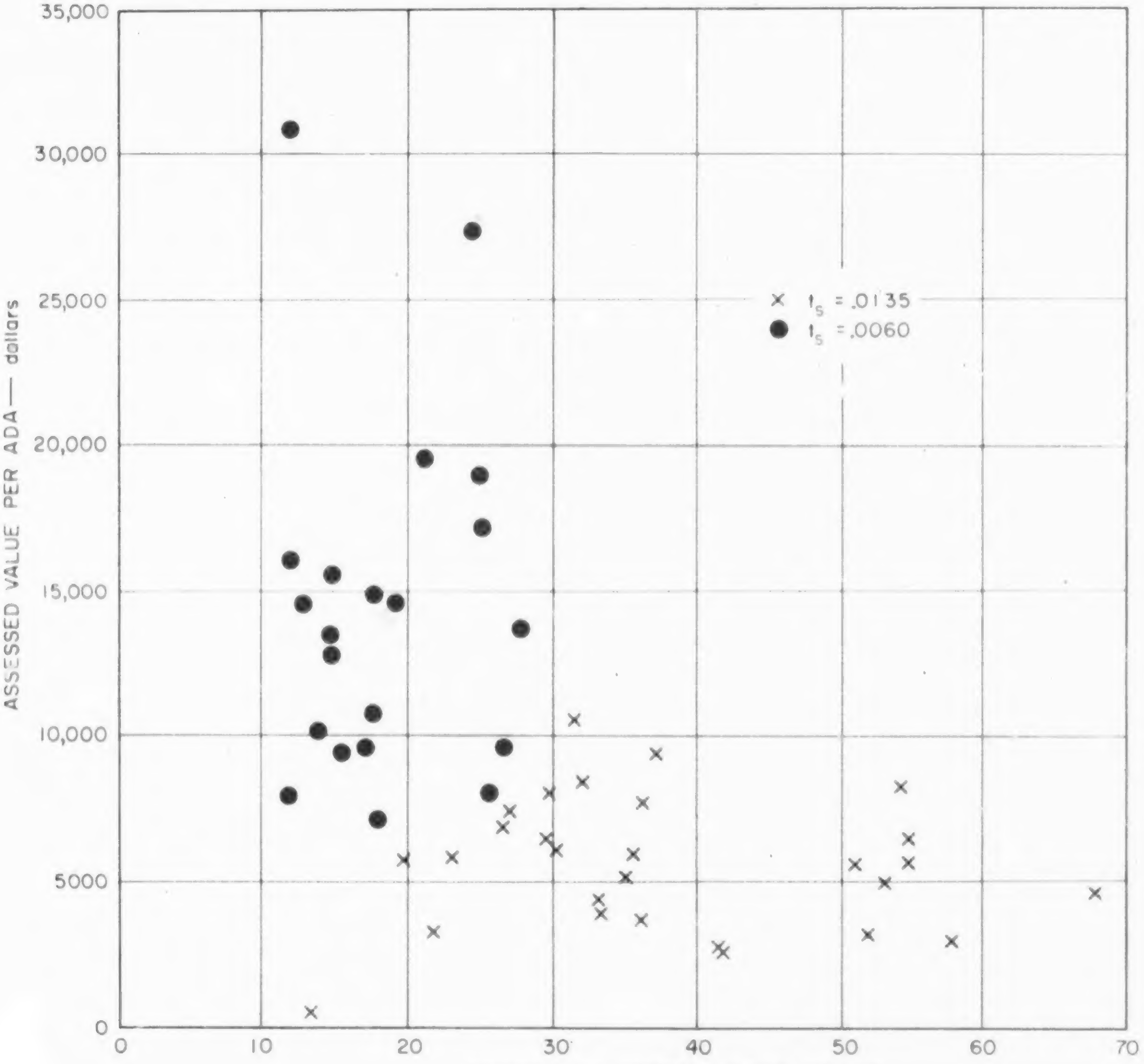


FIGURE 8

RELATIONSHIP BETWEEN PERCENT OF FEDERAL FUNDS OFFSET AND ASSESSED VALUE PER ADA, HIGH SCHOOL DISTRICTS WITH FEDERAL ENTITLEMENT OF 5 PERCENT OR MORE OF CURRENT EXPENSE OF EDUCATION, 1962-63

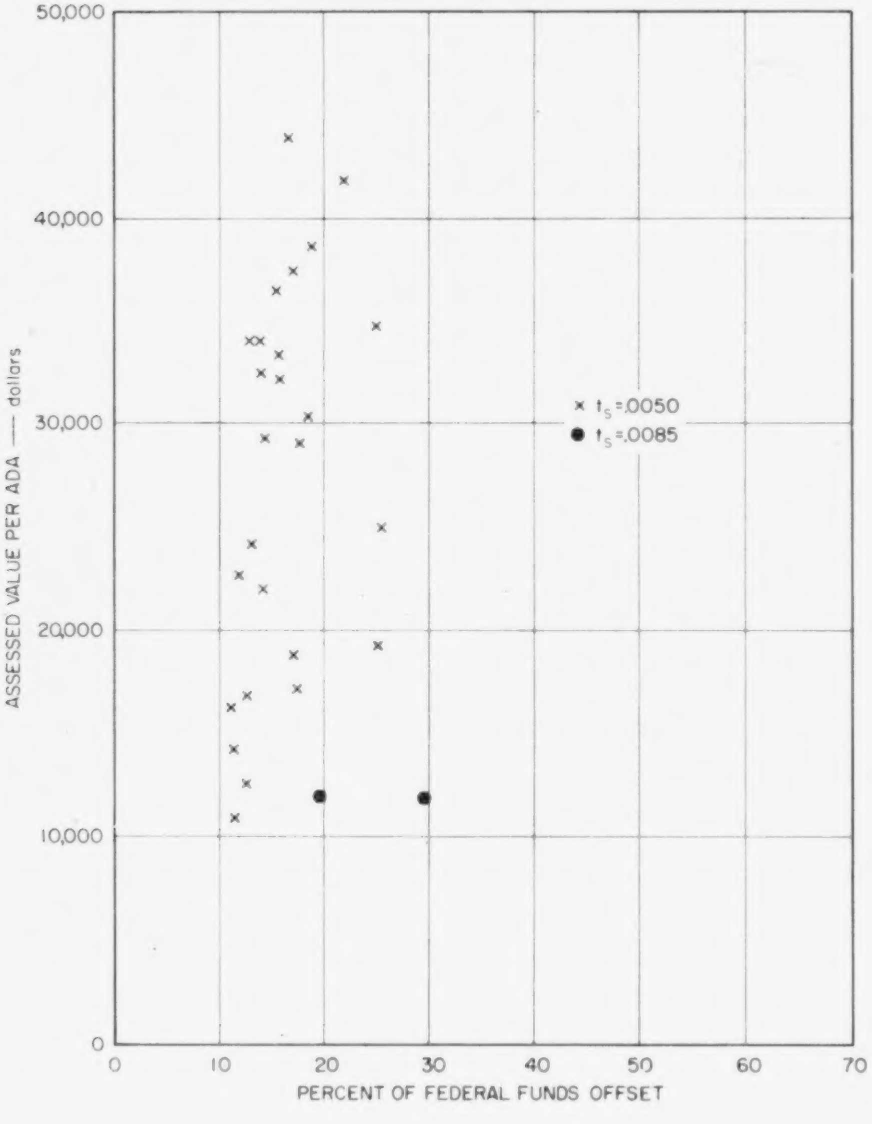
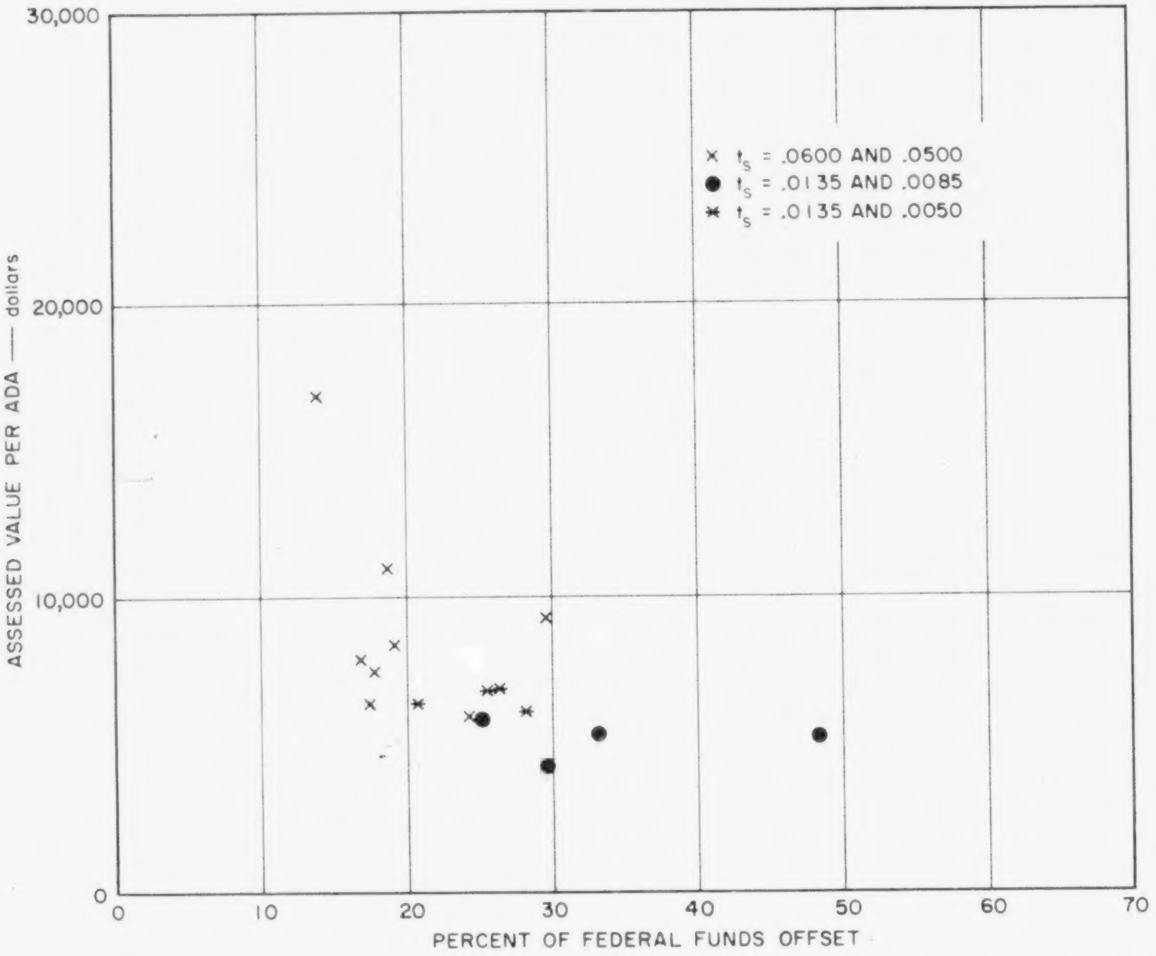


FIGURE 9

VALUE PER ADA — UNIFIED DISTRICTS WITH FEDERAL ENTITLEMENT OF 5 PERCENT OR MORE OF CURRENT EXPENSE OF EDUCATION, 1962–63



entitlement was offset in the case of the unified districts included; the comparable figure for high schools was 17%. As a result, a fixed offset percentage applied directly to state aid would result in increased state payments to elementary schools and decreased payments to high school and unified districts. If such a directly applied offset amounting to 25% of federal entitlements* were employed, the elementary districts included in this study would receive about $530,000 in additional state funds; high school districts would lose about $371,000 and unified districts, $144,000.

Justification for State Offset of Federal Funds

The 14 states, excluding Hawaii, which offset all or part of the federal funds, generally justify offsetting as follows: state aid under an equalization program is designed to compensate for a lack of local revenue sources. The general method of calculation takes into account only those local revenues raised through local taxation, mostly property taxes. There is an admitted absence of such a local tax base for federally connected pupils. However, some or all of the deficiency in the tax base is covered by receipts from the federal government under P.L. 874. If the state government does not take these into account, the local district will receive compensation both from the federal and state government for the same deficiency in local tax base. In other words, the state believes that it is justified in considering P.L. 874 funds as revenues to the local district in the same category as revenues raised by local taxes.

The following calculations will show that if the federal payment creates intradistrict equality, i.e., $F_e \geq F$, there will be a state overpayment for federally entitled pupils, unless F is taken into account in the state aid formula.

For simplicity, we will assume that the state equalization program is based on a fixed value per unit (E), representing the foundation current expense to be supported (more complex formulations would not change the findings of this section). Under the fixed unit program, the state aid is as follows:

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* The 25% figure was recommended in a report to the State Board of Education (Recommendations on Public School Support) issued in November 1962. Use of 25% would cause minimum change in statewide equalization payments, since the average offset was about 25%.

(1) $S = EN - t_sV$,

where S is the state aid payment, E the foundation program, N the ADA or classroom units, t_s the stipulated tax rate for the local district, and V the equalized assessed value of the district.

For the federally connected pupil under Section 3(a) of P.L. 874, the state aid would be:

(2) $S_{3(a)} = EN_{3(a)}$,

since there is no assessed value attached to a 3(a) pupil whose parents both live and work on federal property. For a pupil under Section 3(b), however, there is some assessed value. The state aid for him is as follows:

(3) $S_{3(b)} = EN_{3(b)} - t_sV_{3(b)}$

State aid for nonfederal pupils may be designated as follows:

(4) $S_n = EN_n - t_sV_n$

The amount by which state aid for federal pupils exceeds that for the same number of nonfederal pupils can be determined from the above equations as follows:

(5) Difference (D) = $N_f(S_f/N_f - S_n/N_n)$, where f = 3(a) + 3(b) pupils

$$= N_f \left[\frac{(EN_f - t_sV_{3(b)})}{N_f} - \frac{(EN_n - t_sV_n)}{N_n} \right]$$

$$= N_ft_s \,(V_n/N_n - V_{3(b)} / N_f)$$

If there were no federal payments under P.L. 874, this difference is the amount of state aid required to equalize the revenue derived from federal and nonfederal pupils. The difference reflects the lower property tax base of the federal pupils. If the tax base were the same, then the ratio of assessed value per pupil would be the same for federal and nonfederal pupils, and the above equation would show a zero difference. To the extent that there is a difference and that difference is compensated for by payment under P.L. 874, the state is justified in taking these payments into account.

Note that the difference in the ratios of property values per pupil defines the federal payment for intradistrict equalization; let $L = t_dV$, then

(6) $F_e = N_f(t_dV_n/N_n - t_dV_{3(b)}/N_f)$ (see Chapter 3 on computation of F_e)

and $F_e/N_ft_d = V_n/N_n - V_{3(b)}/N_f$

Thus, F_e/N_ft_d can be substituted in equation (5), yielding the state aid differential in terms of the federal payment for intradistrict equalization:

(7) $D = N_ft_s\ (F_e/N_ft_d)$

$= F_et_s/t_d$

The differential state aid for federal pupils is thus equal to the intradistrict equalizing federal payment times the ratio of the stipulated local tax rate to the actual district local tax rate. As long as the actual federal payment is at least as great as F_e, the differential payment represents a double payment to the local district for federal pupils. Equation (7) also represents the amount of federal payment that the state can legitimately offset to eliminate such double payment. It is important to note that the federal payment to offset is represented by F_e and not the actual federal payment, F. Thus, if the stipulated tax rate is one-half the actual district rate, and the intradistrict equalizing federal payment is one-half the actual federal payment, then the state may legitimately offset one-fourth of the actual federal payment.

The above formula for determining the proper amount of offset is applicable for states using the fixed or variable unit equalization grant. For states using the percentage equalizing formula it can be shown that the direct inclusion of F_e as a deduction from costs properly accounts for the difference between federal and nonfederal pupils. In the purest example of percentage equalization, i.e., that used by Wisconsin, it may be shown that the amount by which state aid for federal pupils exceeds that for the same number of nonfederal pupils is reduced to zero by the inclusion of F_e in the cost formula.

(1) $D = N_f(S_f/N_f - S_n/N_n)$

(2)* $S_i = C_i/V_s\ (V_s - V_d)$, or $S_i = C_i\ (1 - V_d/V_s)$

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* See above for Wisconsin state aid formula.

the costs for federal pupils, when entitlement is at least as great as F_e is as follows;

$$C_f = L_f + F_e + S_f$$

the costs for nonfederal pupils is as follows;

$$C_n = L_n + S_n$$

then the difference formula may be written as follows;

$$(3) \quad D = N_f \left(\frac{L_f + F_e + S_f}{N_f} \right) (1 - V_d/V_s) - \left(\frac{L_n + S_n}{N_n} \right) (1 - V_d/V_s)$$

Assume that state aid per pupil will be the same for federal and nonfederal pupils;

$$(4) \quad S_f/N_f = S_n/N_n$$

substituting (4), reducing terms and cancelling;

$$(5) \quad D = (F_e + L_f - L_nN_f/N_n)\ (1 - V_d/V_s)$$

From Chapter 3, however, we know the following,

$$(6) \quad F_e = L_nN_f/N_n - L_f$$

thus, $F_e + L_f - L_nN_f/N_n = 0$,

and, $D = 0$.

To the extent that the federal payment exceeds the intradistrict equalizing payment (F_e) there is an additional payment to the local district from the federal government. Regardless of the equalizing formula used, the payment above F_e does not constitute double payment with regard to state aid, thus no state offset for this portion is justified. On the other hand, if the federal payment is less than F_e, then the differential justifying offset is accordingly reduced, and may be found simply by substituting F for F_e: that is, in the fixed or variable unit grant, $D' = Ft_s/t_d$, where D' is the differential representing double payment when $F < F_e$.

Although the above formulation shows that states providing equalization aid to local school districts are justified in taking federal payments under P.L. 874 into account in determining the amount of state aid, it does not follow that the methods employed by states to calculate federal fund offsets result in a proper allocation of funds. Of the states with fixed or variable unit equalization programs, only California and Utah come close to using the above method to calculate the amount of offset. Wisconsin's percentage equalizing formula would be perfect, if F_e could be substituted for F. For most other states, it will only be fortuitous if the amount of offset just equals the amount of state aid overpayment that would exist without offset. In the following section, several examples of state overpayment and offset are provided. These are demonstrative; no conclusion can be drawn as to the relationship of offset to overpayment in all districts or in all states using offset. It follows from this analysis that 100% offset is only justified if the federal payment is not in excess of the intradistrict equalizing payment and, for the unit system, if $t_s = t_d$. The federal payments per pupil in excess of the amount required for intradistrict equalization would not normally accrue to the local district in the absence of the federal activity. If the state offsets the amount in excess of the intradistrict equalizing federal payment, then the state would be providing less funds per pupil for federal pupils than for nonfederal pupils. Federal payments in excess of those needed for intradistrict equalization imply an additional purpose of federal aid, for example, interdistrict equalization. State offset of this portion subverts these other purposes. In addition, consideration should be given to the costs incurred by the local district in acquiring and administering the P.L. 874 program. These have been estimated to be 5 to 10% of the funds received.

It should also be remembered that these state overpayments exist only where there is equalization aid, and then only if the measure of local ability is based on real property. If, as in Texas and Florida, the measure of ability is more broadly defined and includes income, then the state aid may be more closely related to true ability and the overpayment for federal connection may disappear.

Evaluation of Offsetting in Selected Districts in Two States

As noted in the section above, where a fixed or variable unit grant system is employed to distribute equalization aid, the jusitifed amount of federal fund offset is determined by the following equation: justified offset = $F_e t_s / t_d$, where $F_e \leq F$. The only unit grant states using formulations that approximate the one that would guarantee the proper offsetting are California and Utah. In these states, a portion of the federal funds are capitalized into assessed value by dividing by t_d; however, the proportion used does not necessarily relate to the difference between F and F_e. The amount of justifiable offsetting has been compared with the actual amount of offsetting in selected districts in California and Virginia. Virginia was chosen for comparison because it has a state aid formula similar to that of California, but uses a substantially different offset formula. The results of the analysis are contained in Tables 54 and 55.

In California 7 districts were analyzed: 3 large city unified districts, and 4 small neighboring districts in Marin County, consisting of a unified district, a high school district and two feeder elementary districts. For these districts, about 35-40% of the P.L. 874 funds are available for offset, according to the analysis presented in the previous section. The formula used in California, i.e., $.4Ft_s/t_d$, takes less than half the justified offset in every case except Novato Unified School District. In this case almost all the justified offset is in fact offset. The reason is that offset is based on entitlement, whereas justified offset is based on the lesser of actual entitlement and intradistrict equalizing entitlement, which in Novato is less than half the actual entitlement. Paradoxically, the justified offset is a lesser proportion of actual entitlement in the cases where the federal payment greatly exceeds the intradistrict equalizing payment. This occurs because justified offset is based on the amount that would normally be available for taxing if the federal payment represented local tax ability. The federal payment in excess of intradistrict equalizing is a bonus to the local area that would not normally be part of the district's tax base, and therefore should not be part of the state offset.

The 10 districts in Virginia are reasonably representative of the county and city districts that constitute the public school system in that state. In 1959-60, the year for which we had adequate data for the analysis, the state equalization program had two provisions that have since been eliminated: (1) the calculated equalization aid was prorated at 51% of the calculated need; and (2) a limit of $225,000 per district was set on equalization aid. Under the old conditions, offsetting occurred in only 5 of the 10 sample districts. The proportion of funds offset varied greatly, from 7% in Fairfax County to 51% in Prince William County. In the latter county, the proportion offset was double the amount justified.

Using the 1959-60 data, but changing the equalization procedure to conform to that used at present in Virginia, the offsetting was recalculated. The results are strikingly different and conform more to the present practice. Offsetting occurred in 8 of the 10 districts. All the federal funds would be offset in 4 of these districts. In all but one district, the proportion of funds offset would be much in excess of that justified. It would appear that the offsetting procedure now used in Virginia is far less satisfactory than the one employed in California.

Table 54

OFFSET OF FEDERAL FUNDS IN SELECTED DISTRICTS IN CALIFORNIA
(Dollars in Thousands)
FY 1962

District	(1) Federal Entitlement F	(2) Calculated F_e	(3) Lesser of .95F or F_e	(4) t_s ($ per $100)	(5) t_d ($ per $100)	(6) Ratio Adjustment	(7) Offset Available 3 × 4 × 6 ÷ 5	(8) Offset Taken	(9) 7 ÷ 1	(10) 8 ÷ 1
Oakland (U)	$ 882	$1,533	$ 838	$1.10	$3.34	.947*	$ 261	$105	.29	.12
Long Beach (U)	1,307	1,518	1,242	1.34	2.95	--	564	229	.43	.18
San Diego (U)	3,924	3,937	3,728	1.10	2.85	.971*	1,397	500	.36	.13
[illegible]	98	41	41	2.20	3.50	--	26	23	.26	.23
San Rafael (H)	151	172	144	.50	1.32	--	54	16	.36	.11
Sausalito (E)	[illegible]	64	43	.60	1.87	--	14	6	.31	.13
San Jose (E)	276	244	244	1.35	2.50	--	131	46	.47	.17

* No equalization aid for junior colleges in these districts.

Sources: Appendix D. U.S. Office of Education, SAFA, Application forms RSF-1. State of California, State Controller, Annual Report of Financial Transactions Concerning School Districts of California, Fiscal Years 1961 and 1962. State of California, Department of Education, "Principal Apportionment," Part I of Apportionment of the State School Fund, Fiscal Year 1962. County Assessor, Marin County.

Table 55

OFFSET OF FEDERAL FUNDS IN SELECTED DISTRICTS IN VIRGINIA
(Dollars in Thousands)
FY 1960

	(1) Federal Entitlement F	(2) Calculated F_e	(3) Lesser of .95 F or F_e	(4) t_s/t_d ($ per $1.00)	(5) Equilization Aid	(6) Offset Available	(7) Offset Taken	(8) Offset Taken 1964-65 Basis*	(9) 6 ÷ 1	(10) 7 ÷ 1	(11) 8 ÷ 1
County Districts											
Arlington†	$1,523	$2,569	$1,447	$.50/1.35	$ 0	$579	$ 0	$ 0	.38	0	0
Fairfax†	3,187	2,060	2,060	.50/3.24	0	318	225‡	2,990	.10	.07	.94
Norfolk	919	559	559	.50/2.96	225‡	94	0	670	.10	0	.73
Prince William†	261	345	248	.50/1.73	0	72	143	261	.26	.51	1.00
Princess Anne	635	237	237	.50/2.20	225‡	54	0	518	.09	0	.81
Roanoke	38	20	20	.50/1.48	225‡	7	0	38	.20	0	1.00
City Districts											
Alexandria†	627	826	595	.50/1.12	0	266	0	0	.42	0	0
Hampton	517	287	287	.50/1.35	188	106	37	517	.21	.07	1.00
Norfolk†	2,424	1,998	1,998	.50/1.01	0	989	225‡	537	.40	.09	.22
Portsmouth	449	364	364	.50/1.26	136	144	89	449	.30	.18	1.00

* For 1964-65, state aid substantially increased; proration and ceilings on aid per district eliminated.
† No equalization aid given to these districts in 1959-60.
‡ Ceiling of $225,000 per district in effect in 1959-60.

Sources: Appendix D. Commonwealth of Virginia, State Board of Education. U.S. Office of Education, SAFA, Application Forms RSF-1.

In general, a variable proportion of the actual federal entitlement appears to be available for justifiable offset. In the two states examined above, this proportion varied from a minimum of 9% in Princess Anne County, Virginia, to a maximum of 47% in San Jose Elementary School District, California. The minimum availability for offset occurs when there is considerable federal overpayment, meaning that the intradistrict equalizing payment, which limits the justified offset, is much less than the actual payment; second, the district tax rate will be relatively high, resulting in a low t_s/t_d ratio. The offset taken will be close to the offset theoretically available as determined above, where federal payment is less than F_e, so that F_e is not controlling, and where the district tax rate is low relative to the stipulated tax rate. To devise an offset formula that will just take the justified proportion of federal funds, i.e., representing double payment, it is necessary to know and to use the value of F_e.

Using the 17 districts in California and Virginia shown in Tables 54 and 55, it may be estimated that offsetting an average of 30% of the federal funds is justified.

SYMBOLS USED IN STUDY OF P.L. 815

T = a time period during which a school district is potentially eligible for receiving P.L. 815 payments

P = payments to a school district under P.L. 815 during T

P_e = financial burden during T placed on a school district because of an increase in federally connected enrollment

N = average daily membership = ADM

$\triangle$ = augmentation during T

K = costs of building minimum school facilities during T, financed or repaid with revenues from property taxes or federal payments

L = residential property tax revenues for construction of school facilities during T

h = ratio of average number of 5(a)2 and 5(a)3 ADM to average total non-5(a)1 ADM

X = ratio of property taxes attributable to each 5(a)2 and 5(a)3 ADM to property taxes attributable to each nonfederally connected ADM

w = state average per pupil cost of construction minimum school facilities

SPPC = state per pupil costs of building minimum school facilities

Subscripts

f = federally connected pupils

1 = unhoused federally connected pupils under Section 5(a)1

2 = unhoused federally connected pupils under Section 5(a)2

3 = unhoused federally connected pupils under Section 5(a)3

Chapter 7

EVALUATION OF P.L. 815*

General Discussion

The purpose of the evaluation of P.L. 815 is to examine whether the provision of assistance for the construction of urgently needed minimum school facilities has relieved the financial burden placed on school districts as a result of the substantial increases in school membership related to new or increased federal activities. Five of the fifteen sections of the law deal with specific ways in which the federal assistance can take place. These five sections are:

1. Section 5--federal payments to school districts according to Section 5 of P.L. 815. Section 5 distinguishes between (a) children residing on federal property with a parent employed on federal property, (b) children residing on federal property, or residing with a parent employed on federal property and, (c) children whose membership results directly from activities of the United States. These children are called 5(a)1, 5(a)2, and 5(a)3 pupils. Section 5 payments are made if there is a sudden increase in one or more of these categories of children. This increase is compared with 5% of the total ADM (average daily membership) during the base year in case of 5(a)1 and 5(a)2 children and with 10% of the total ADM during the base year in case of 5(a)3 children.

2. Section 8--federal payments in addition to Section 5 payments in order to finance the nonfederal share of the costs of the projects set forth in the school districts' applications. These payments are made in emergencies like floods and fires.

3. Section 9--assistance in the form of providing temporary school facilities or payments equal to the costs of building temporary school facilities if the membership of some or all of the federally connected children will be of temporary duration.

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* By Dr. Henri L. Beenhakker.

4. Section 10--assistance in the form of providing minimum school facilities if (a) no tax revenues of the state or any political subdivision thereof may be expended for the free public education of federally connected children, or (b) no local education agency is able to provide suitable free public education for such children.

5. Section 14--payments that are mostly made to school districts providing free public education for children who reside on Indian lands located outside the school district.

The above description of federal assistance is a brief one. "A compilation of Public Law 815, Eighty-First Congress, as amended (20 M.S.C. 631-645)"* gives a complete description. Labovitz has described the history of P.L. 815.+

During the analysis of P.L. 815, it appeared that of the school districts that received or applied for P.L. 815 payments, only a few were familiar with the details of the law. School districts cannot be blamed for this since there are no references that provide details such as determination of the augmentation in unhoused ADM for Section 5, or the application of the localization procedure.

The analysis of P.L. 815 in this report emphasizes Section 5 payments, since the total of these payments over the years 1951-64 is about ten times as much as the total of Sections 8, 9, and 14 payments.

Quantitative Evaluation of Payments under Section 5 of P.L. 815

The following procedure has been developed in order to examine whether federal payments received under Section 5 of P.L. 815 are smaller than, equal to, or larger than the financial burden placed on a school district as a result of its increase in federally connected enrollment in elementary and secondary schools. As in any examination of capital expenditures, this study has to be conducted for a period of time not shorter than approximately 10 years. The procedure has been applied to school districts for which sufficient information could be obtained through interviewing the local officials. These school districts are (1) Salina, Kansas, (2) Brevard County, Florida, and (3) Montgomery County, Maryland.

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* U.S. Office of Education; Department of Health, Education, and Welfare, Washington, D.C., January 1964.

+ Labovitz, op. cit.

Pupils eligible for payment under P.L. 815 are defined as follows: 5(a)2 children are those residing on federal property or residing with a parent employed on federal property (situated in whole or in part in the same state as the school district of such agency or within reasonable community distance from such school district); 5(a)3 are those whose membership results directly from activities of the United States (carried on either directly or through a contractor). There is a small difference between the definition of 5(a)2 children in P.L. 815 as given above and that used in this study. This study considers "children with a primary wage earner employed on federal property" rather than "children with a parent employed on federal property." The distinction is made since children with a secondary wage earner employed on federal property do not result in a burden placed on the school district.

The following notation is introduced:

P = actual payments to a school district under P.L. 815 during period T

P_e = financial burden during period T placed on a school district as a result of an increase in federally connected enrollment in elementary and secondary schools

ΔN = the augmentation in total ADM during period T

ΔN_f = the augmentation in ADM of 5(a)2 and/or 5(a)3 children during period T

K = the costs of building minimum school facilities during period T, which were financed or will be repaid with revenues from property taxes or federal payments made under P.L. 815

L_f' = residential property tax revenues from local federally connected families for construction of school facilities during period T

One has to compare P with P_e in order to examine whether P.L. 815 payments are smaller than, equal to, or larger than the financial burden placed on a school district. Information regarding P is kept on the school district's application forms in the Office of Education.*

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* Summary sheet for application completed on Public Law 815, as amended.

P_e is determined as follows:

$$(1) \quad P_e = \frac{K}{\triangle N} \triangle N_f - L_f'$$

In other words, the financial burden placed on a school district as a result of an increase in federally connected enrollment in elementary and secondary schools is equal to that part of costs of building minimum school facilities which reflects the costs of the augmentation in 5(a)2 and 5(a)3 children, minus revenues from local families of 5(a)2 and 5(a)3 children as a result of property taxes from residences.

L_f' is determined as follows:

$$(2) \quad L_f' = hx_f K$$

where

h = ratio of average number of 5(a)2 and 5(a)3 ADM to average total non- 5(a)1 ADM. The averages are the averages over the repayment period of school bonds issued during period T

x_f = ratio of property taxes attributable to each 5(a)2 and 5(a)3 ADM to property taxes attributable to each nonfederally connected ADM (assumed by P.L. 815 to be .50)

K - as defined previously

The following assumptions are made for the computation of P_e:

1. Equation (1) assumes that nonproperty tax revenues per family from federally connected families are the same as from nonfederally connected families
2. The unexpended balance of construction funds at the beginning of period T is not significantly different from the unexpended balance at the end of period T

It is felt that the above assumptions do not make the comparison between P and P_e unrealistic.

P consists basically of three components:

(3) $P = 0.95w\ (\triangle N_1) + 0.50w\ (\triangle N_2) + 0.45w\ (\triangle N_3)$

where

w = average per pupil cost of constructing minimum school facilities in the state in which the school district is located

$\triangle N_1$ = the augmentation in unhoused ADM of 5(a)1 children (i.e., children living on federal property with a parent working on federal property) during the increase period

$\triangle N_2$ = the augmentation in unhoused ADM of 5(a)2 children during the increase period

$\triangle N_3$ = the augmentation in unhoused ADM of 5(a)3 children during the increase period

The augmentation in unhoused ADM is arrived at by first computing the augmentation in ADM (= $\triangle$ADM) and then subtracting the number of federally and nonfederally connected housed students.

The augmentation in ADM or $\triangle$ADM is determined according to one of the following four rules:

1. $\triangle$ADM = terminal membership minus the ADM during the base year. The terminal membership is the membership at the close of the increase period.

2. $\triangle$ADM = terminal membership minus the ADM during the base year plus the nonfederal deduction. The nonfederal deduction is 107% of the nonfederal ADM during the base year minus terminal membership.

3. $\triangle$ADM = terminal membership minus terminal membership of the last prior eligible application.

4. $\triangle$ADM = terminal membership minus the total number of children previously counted for purposes of Section 5 of P.L. 815.

These four rules for computing $\triangle$ADM result in four different $\triangle$ADM values; the smallest of these four values is used in the calculation of $\triangle N_1$, $\triangle N_2$, and $\triangle N_3$.

A difference between P and the P_e, calculated above, may be explained by one or more of the following factors:

1. P may be higher than P_e because of federal children who were entitled due to secondary employment of mother only. This relates to the difference in the definition of 5(a)2 children in this study and the definition of 5(a)2 children in P.L. 815.

2. The complex computation of $\triangle$ADM as described above results in a computed augmentation of federally connected ADM during period T which is different from the actual augmentation in ADM during period T.

3. Too high or too low actual costs of constructing minimum school facilities. The federal government specifies a single cost per pupil for an entire state and does not make any distinction between costs of building a high school and costs for building an elementary school. Also, there is no distinction between costs of new buildings and costs of additions. School districts where more high schools than elementary schools were built are likely to have too high actual costs, while school districts with more new elementary schools are likely to have too low actual costs. A similar observation can be made for school districts with a majority of new buildings versus school districts with a majority of additions. A final reason for construction cost differences is the possible inflation of construction costs since the time of application, because the time lag between date of application and starting date of construction varies between one and four years.

4. In prescribing the determination of P, P.L. 815 uses an arbitrary "payment ratio" of .50 for 5(a)2 ADM rather than computing appropriate payment ratios for individual school districts. Or, put another way, P.L. 815 assumes that the ratio of property taxes attributable to each 5(a)2 ADM to property taxes attributable to each nonfederally connected ADM (x_f in formula (2)) is .50, regardless of the actual value of x_f. That this may not be the case is shown later for the Salina case study, in which an x_f of .33 was obtained.

5. The 5% absorption condition for both 5(a)1 and 5(a)3 children, i.e., the federal government pays 95% of construction costs for 5(a)1 children and 45% for 5(a)3 children (see equation (3)).

during which Salina was potentially eligible for receiving P.L. 815 payments was observed. In other words, $T = 13$. The following values were obtained for the parameters of equations (1) and (2)

$P = \$1,090,000$

$K = \$4,880,000$

$\Delta N = (1950\text{-}51 \text{ to } 1963\text{-}64) \quad 4,884$

$\Delta N_f = (1950\text{-}51 \text{ to } 1963\text{-}64) \quad 2,192$

$h = .18$

$x_f = .33^*$

The above information gives:

$$L_f' = .18 \times .33 \times \$4,880,000$$

$$= \$290,000 \text{ (see equation (2))}$$

and

$$P_e = \frac{\$4,880,000}{4,884} \quad 2,192 - \$290,000$$

$$= \$999 \times 2,192 - \$290,000$$

$$= \$2,190,000 - \$290,000$$

$$= \$1,900,000 \text{ (see equation (1))}$$

The foregoing computations do not take into consideration the fact that Schilling AFB (the federal facility near Salina) is planned to be closed down beginning in January 1965, since this plan was not known until the fall of 1964. Note that, under the assumption of the continuation of Schilling AFB, only 57.4% of the federally connected school construction burden was met by federal funds ($P/P_e \times 100$), and

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* This is the product of the three ratios identified under item 2, above. Their source is explained more fully in the Salina case study under the subsection Sample for Federally Connected Property Tax Payments.

The Office of Education needs the following additional information if it wants to apply the procedure described above to any school district in the country.

1. K or the costs of building minimum school facilities during period T paid by local property taxes or P.L. 815. This K is probably not hard to obtain since the "Summary Sheets for Application Completed on Public Law 815, as amended," report federal and nonfederal share of construction costs. K is obtained by subtracting state construction payments from the nonfederal share of construction costs.

2. The actual ratio of property taxes attributable to each 5(a)2 and 5(a)3 ADM to property taxes attributable to each nonfederally connected ADM. The components of this ratio may be estimated by sampling procedures--for example, the method used in the Salina case study was to multiply estimates of the following three ratios listed below.

    a. Ratio of nonfederally connected residential assessed valuation to total nonfederally connected assessed valuation (.55 for Salina).

    b. Ratio of mean assessed valuation of federally connected to nonfederally connected housing units (.72 for Salina).

    c. Ratio of federally connected housing units per 5(a)2 and 5(a)3 ADM to nonfederally connected housing units per nonfederally connected ADM (.83 for Salina).

Ratio (a) above can be approximated for a few selected local areas with a population of 50,000 or more from the Census of Governments, Taxable Property Values*--but note that a proper computation of the ratio requires the deduction of federally connected residential property valuation from the values found in the Census of Governments. The true federally connected residential property valuation, as determined by use of ratios (b) and (c) above, can probably only be found through actual sampling of a given school district.

The above information became available for Salina, Kansas, through the case study. A period of thirteen consecutive years (FY 52-FY 64) that P_e was greater than P for Salina by a total of \$810,000 (\$1,900,000 - \$1,090,000). This difference between P and P_e can roughly be accounted for by the following adjustments:

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* U.S. Department of Commerce, Bureau of the Census.

	Thousands of Dollars	
Actual Salina P.L. 815 payments		\$1,090
1. *Add*: Funds for increase in federally connected ADM *not* covered by P.L. 815 payments [(.95 × 193 5(a)1's + .5 × 211 5(a)2's) × average Kansas per pupil cost rate of \$1,130]. These funds cover the financial burden resulting from an increase in federally connected ADM during years in which no P.L. 815 payments were received.	\$+326	
Payments adjusted for ADM differences		1,416
2. *Deduct*: Decrease due to \$141 excess of average Kansas per pupil cost rate (\$1,130) over Salina K/ΔADM (\$999).	-165	
Payments adjusted to Salina K/ΔADM rate		1,251
3. *Add*: Excess of federally connected property tax payments that would be assumed by P.L. 815 (\$999 × 1,834 × .5 = \$916,000) over the amount of such taxes as estimated from the sample of federally connected families in Salina (\$290,000).	+626	
4. *Add*: Amount to bring 5(a)1 contribution up from 95% to 100% of Salina K/ADM rate.	+ 18	
5. Not accounted for, due to rounding of data	+ 4	
Financial burden for school construction due to increase in federally connected enrollment (P_e)		\$1,900
Total adjustments	\$ 810	

Inspection of the above adjustments reveals that the major causes of the \$810,000 difference between P and P_e are: (1) the failure of many federally connected students to qualify for P.L. 815 assistance (underpayment of \$326,000); and (2) the assumption by the P.L. 815 formula that federally connected families in Salina paid more school taxes than was actually found to be the case (underpayment of \$626,000). These two sources of underpayment were offset somewhat by a \$165,000 overpayment due to the excess of the average Kansas per pupil cost rate over the average Salina rate (K/ADM).

P and P_e have been computed for Montgomery County, Maryland, for the period FY 56-FY 63. The following values were obtained for the parameters of equations (1) and (2).

$P = \$16,302,902$

$K = \$107,308,400$

$N = 43,115$

$N_f = 16,940$

$h = .36$

$x_f = .65$

The last ratio was obtained by multiplication of the following two ratios.

(1) The ratio of nonfederally connected residential assessed valuation to total nonfederally connected assessed valuation (.629)

(2) The ratio of mean assessed valuation of federally connected to nonfederally connected housing units (1.04)

The ratio of federally connected housing units per 5(a)2 and 5(a)3 ADM to nonfederally connected housing units per nonfederally connected ADM was not available and was assumed to be 1. The above information gives:

$L'_f = .36 \times .65 \times \$107,308,400 = \$25,110,166$

and

$$P_e = \frac{\$107,308,400}{43,115} \times 16,960 - \$25,110,116$$

$$= \$41,850,276 - \$25,110,116$$

$$= \$16,740,160$$

Hence, P_e was greater than P for Montgomery by a total of $437,258 ($16,740,160 - $16,302,902).

P and P_e have also been computed for Brevard County, Florida, for the period FY 52-FY 64. The values of the parameters of equations (1) and (2) are:

$P = \$ 7,400,000$

$K = \$31,710,000$

$N = 33,991$

$N_f = 17,244$

$h = .40$

$x_f = .47$

The value for x_f was obtained in a way similar to the computation of x_f for Montgomery County. The ratio of nonfederally connected residential assessed valuation to total nonfederally connected assessed valuation is .47. The ratio of mean assessed valuation of federally connected to nonfederally connected housing units is assumed to be 1, since no information was available.

$L'_f = .40 \times .47 \times \$31,710,000 = \$5,961,480$

$$P_e = \frac{\$31,710,000}{33,991} \times 17,244 - \$5,961,480$$

$$= \$16,085,000 - \$5,961,480$$

$$= \$10,123,520$$

Thus, P_e is larger than P. The difference is \$10,123,520 - \$7,400,000 = \$2,723,520. Seventy-four percent of the federally connected school construction burden was met by federal funds ($P/P_e \times 100$).

An analysis of the differences between P_e and P for Montgomery County and Brevard County has not been made, since the available information was not sufficient. However, these analyses can be performed in a way similar to the analysis of the difference between P_e and P.

Analysis of School Districts that Did Not Meet the Section 5 Eligibility Requirements

Before 1958 the eligibility requirements were established separately for 5(a)1, 5(a)2, and 5(a)3 children. The definition of 5(a)1, 5(a)2, and 5(a)3 children is given in Subsection 5(a) of P.L. 815. Since 1958 no distinction was made between 5(a)1 and 5(a)2 children for the eligibility requirements. A Compilation of Public Law 815, Eighty-First Congress, as amended (20 U.S.C. 631-645)* describes the eligibility requirements. The increase in federally connected children is compared with 5% of the total ADM during the base year in case of 5(a)1 and 5(a)2 children and with 10% of the total ADM during the base year in case of 5(a)3 children.

Applications, payments received, and rejections have been studied for a sample of 146 school districts from every state over the period 1952-64. The applications rejected have been examined in order to investigate whether there is any correlation between the number of rejections and the base year total ADM. That is, can one expect more rejections in school districts with a large base year total ADM than in school districts with a small base year total ADM?

The number of rejections in the sample of 146 school districts during the period 1952-64 is given in Figure 10. Categories with no rejections are not pictured in this figure.

Figure 10 indicates that the sample had 92 rejections and that 39% of the rejections were in school districts with a total ADM smaller than 3,000.

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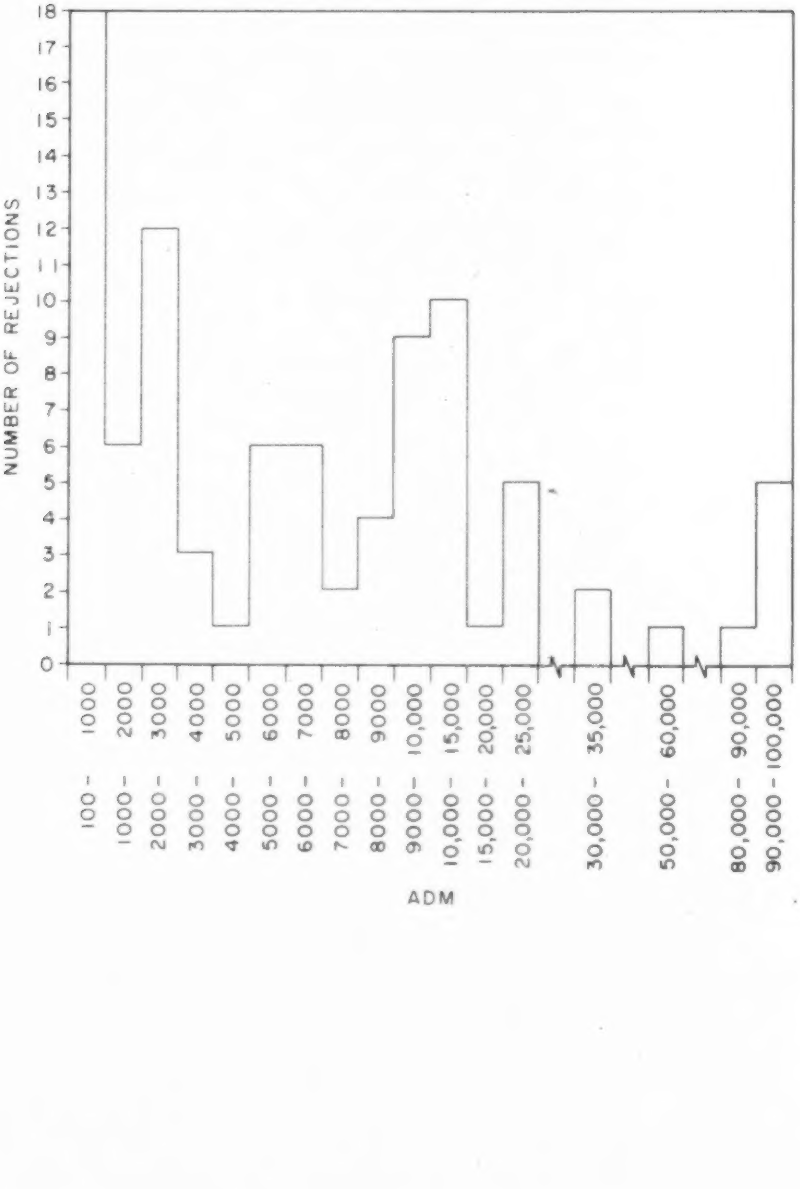
* U.S. Office of Education; Department of Health, Education, and Welfare, Washington, D.C., January 1964.

FIGURE 10

NUMBER OF REJECTIONS PER ADM CATEGORY



This percentage, however, is misleading since the number of smaller school districts is larger than the number of larger school districts. In other words, one has to consider the number of applications per ADM category in order to establish whether there are relatively more rejections in the smaller or larger school districts. Table 56 reports the number of applications per ADM category for the sample of 146 school districts during the period 1952-64. This table indicates that, as a percentage of the number of applications, there were more rejections in the larger school districts. It is not known how many school districts did not apply for P.L. 815 payments because they believed that they could not meet the eligibility requirements. Nevertheless, it is probably true that the percentage of rejections is larger for the larger school districts, since it is harder for these school districts to meet the eligibility requirements. Figure 11 depicts the percentage of rejections for the different ADM categories.

From the above, one can conclude that different eligibility requirements ought to be established for school districts of different sizes.

It has also been investigated whether the change in eligibility requirements in 1958 influenced the shape of the distribution of Figures 10 and 11 significantly. The shape of these distributions does not change significantly if one does not include the rejections prior to 1958. However, the sample size may be too small to draw the conclusion that the change in eligibility requirements in 1958 did not influence the above distributions.

A Comparison of State Per Pupil Cost and Per Pupil Actual Costs of Building Minimum School Facilities

The State Per Pupil Costs (SPPC) are the average costs of building minimum school facilities in each state. "Minimum school facilities" are those instructional and auxiliary rooms (and initial equipment), inclusive of single purpose auditoriums, single purpose gymnasiums, and any built-in spectator space, necessary to operate a program of free public education for the school members of the applicant at normal capacity in accordance with the laws and customs of the state. SPPC figures for the years 1953-64 are given in Appendix Table H-1.

The computation of SPPC's does not distinguish between the costs of building elementary schools and the costs of building high schools. There is also no distinction made between the costs of building junior high schools and the costs of building senior high schools or the costs of constructing new school buildings and the costs of constructing additions. In other words, the federal government assumes that the SPPC is

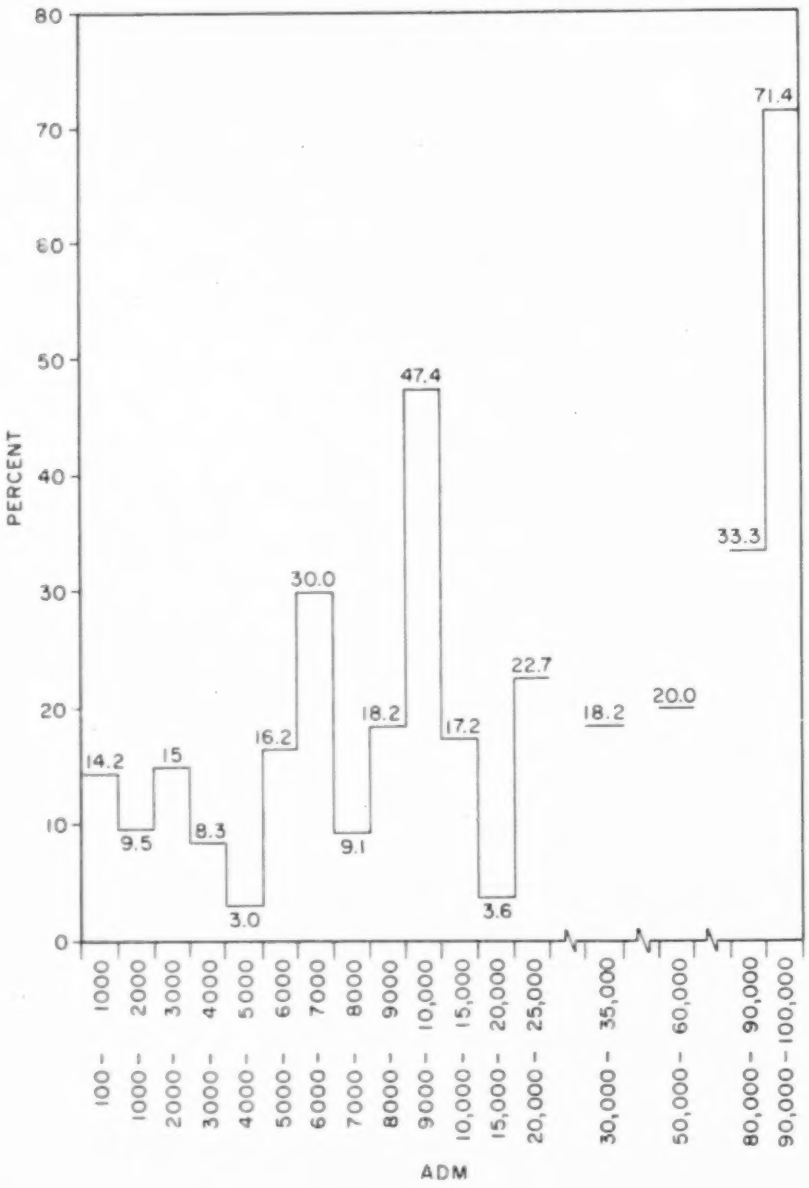
Table 56

NUMBER OF APPLICATIONS AND NUMBER OF REJECTIONS PER ADM CATEGORY

School Districts With a Total ADM Between	Number of Applications	Number of Rejections	Percentage Rejections
100 - 1000	127	18	14.2%
1000 - 2000	63	6	9.5
2000 - 3000	80	12	15.0
3000 - 4000	36	3	8.3
4000 - 5000	33	1	3.0
5000 - 6000	37	6	16.2
6000 - 7000	20	6	30.0
7000 - 8000	22	2	9.1
8000 - 9000	23	4	17.4
9000 - 10,000	19	9	47.4
10,000 - 15,000	58	10	17.2
15,000 - 20,000	28	1	3.6
20,000 - 25,000	22	5	22.7
30,000 - 35,000	11	2	18.2
50,000 - 60,000	5	1	20.0
80,000 - 90,000	3	1	33.3
90,000 - 100,000	7	5	71.4

FIGURE 11

PERCENT REJECTIONS PER ADM CATEGORY



equal to the average per pupil costs of building elementary schools and high schools and considers additions as new buildings. The construction costs of high schools are higher than the construction costs of elementary schools, while the construction costs of new buildings are generally also higher than the construction costs of additions. Hence, school districts receiving P.L. 815 payments for elementary schools are paid too much, while school districts receiving P.L. 815 payments for high schools are not paid enough.

An investigation of the differences between the per pupil construction costs* of elementary schools and high schools, junior high schools and high schools, new buildings and additions was made for the Section 5 payments which were received by the 146 school districts during the years 1952-64. In other words, a sample including school districts from the entire United States, was taken.

Table 57 gives the number of Section 5 payments per type of school building made to these school districts during the years 1952-62, and the average per pupil construction costs. For instance, the $808 reported for elementary schools was the average per pupil construction cost of the 837 elementary schools. A total of 7,892 Section 5 payments has been studied.

Table 57

AVERAGE PER PUPIL CONSTRUCTION COSTS AND NUMBER OF SECTION 5 PAYMENTS PER TYPE OF SCHOOL BUILDING FOR 146 SCHOOL DISTRICTS

Type of School Building	Average Per Pupil Construction Costs		Number of Section 5 Payments	
	New Buildings	Additions	New Buildings	Additions
Elementary schools	$ 808	$ 625	837	641
Junior high schools	925	907	940	912
High schools	1,291	1,139	2,456	2,106

---

* By construction costs is meant the costs of building minimum school facilities.

An average SPPC figure was computed in order to gain an impression of the magnitude of the differences between SPPC and average per pupil costs of building minimum school facilities as observed in our random sample of 146 school districts. The average SPPC figure used for this comparison is the average SPPC of all the SPPC's reported in Appendix H-1. This average SPPC is $1,221.00.

Table 58 pictures the differences between $1,221 and the average per pupil construction costs of Table 57.

Table 58

DIFFERENCES BETWEEN
AVERAGE PER PUPIL CONSTRUCTION COSTS
AND AVERAGE SPPC

Type of School Building	Average Construction Costs minus Average SPPC
Elementary schools	-$384
Elementary schools - additions	-580
Junior high schools	-281
Junior high schools - additions	-309
High schools	+70
High schools - additions	-82

It has to be realized that Table 58 gives us only an impression of the differences between actual average per pupil construction figures and SPPC. One has to make the computations year by year and state by state in order to get more realistic differences. However, the differences reported in Table 58 are sufficient to convince us that the federal government should make a distinction between the different types of school buildings for the computation of SPPC figures.

An Analysis of the Nonfederal Share of Costs of Building School Facilities

School districts are not required by law to participate in the costs of building school facilities, although the school districts' application forms show the federal and nonfederal share of these costs. The cost figures have been studied for the sample of 146 school districts during the period 1952-64. The percentage of the total construction costs which is equal to the nonfederal share* has been computed for the payments received by these school districts during this period of time. Table 59 reports the number of payments received per percentage nonfederal share. Thus, out of the 422 P.L. 815 payments received by school districts, there were 206 cases where the school district paid between 0 and 5% of the total construction costs; out of the 422 payments received, there were 32 cases where the school district paid between 6 and 10% of the total construction costs, etc.

The conclusion one can make from the above table is that the percentage nonfederal share is in general low; 56% of the cases studied had a percentage nonfederal share lower than 10%, and 48% had a percentage nonfederal share lower than 5%.

It has also been investigated whether federal payments tend to reduce or increase a future percentage nonfederal share. That is, does the percentage nonfederal share of a school district decrease or increase over a number of successive P.L. 815 payments received by the school district?

Our sample consisted of 422 P.L. 815 payments received by school districts (see Table 59). The trend of the percentages nonfederal share has been examined for school districts that received at least three successive P.L. 815 payments. The P.L. 815 payments received were listed according to the following four classes:

I Successive payments with a general increasing trend of the percentage nonfederal share.

II Successive payments with a general decreasing trend of the percentage nonfederal share.

III Successive payments where the percentage nonfederal share was about constant.

IV Successive payments where no general trend of the percentage nonfederal share could be recognized.

Table 60 shows the percentage of P.L. 815 payments found in each of the above classes.

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* This percentage will be called "percentage nonfederal share."

Table 59

NUMBER OF PAYMENTS RECEIVED
PER PERCENTAGE NONFEDERAL SHARE

Percentage Nonfederal Share	Number of Payments Received
0-5	206
6-10	32
11-15	18
16-20	15
21-25	17
26-30	18
31-35	11
36-40	15
41-45	10
46-50	19
51-55	9
56-60	9
61-65	9
66-70	8
71-75	6
76-80	7
81-85	5
86-90	4
91-95	4
96-100	0
Total	422

Table 60

PERCENTAGE OF
P.L. 815 PAYMENTS PER "TREND-CLASS"

Class	Percentage
I	8.3%
II	15.3
III	23.6
IV	52.8
Total	100.0%

The percentages of Table 60 disclose that there is no indication that federal payments tend to reduce or increase the future percentage nonfederal share.

Section 5 Payments

The distribution of the magnitudes of Section 5 payments received by all the school districts in the country, has been examined. Appendix H-2 gives the number of Section 5 payments received during 1951, 1952, 1963, and 1964 per class of magnitude. The following observations can be made from Appendix Table H-2.

1. The total number of Section 5 payments in (a) 1951 was 195, (b) in 1952 was 665, (c) in 1963 was 148, and (d) in 1964 was 61.

2. The three largest numbers of Section 5 payments during each of the four years fell into the same three classes, viz. class 100,000-149,999; class 150,000-199,999; and class 200,000-249,999.

3. Except for the cluster of number of Section 5 payments mentioned in 2 above, the number of payments in each year considered, seemed to be randomly distributed over the other magnitude classes.

The number of successive years a school district received Section 5 payments has also been examined. The number of successive years is defined as those during which a school district received, without interruption, federal assistance. For instance, if a school district would have received P.L. 815 payments in 1952, 1957, 1958, 1959, and 1963, then the number of successive years during which a school district received payments is three.

The total number of P.L. 815 payments made during 1951-64 is 3,207. The number of school districts that received P.L. 815 payments during two successive years is 459; during three successive years, 140; during four successive years, 42; during five successive years, 25; and during six successive years, 6. Table 61 pictures the number of school districts in each state and territory with a number of successive years of 1, 2, 3, 4, 5, and 6.

Table 61 discloses that California, the state with the highest total ADA, has the maximum number of school districts with a number of successive years 2, 3, and 4. Texas, also with a high ADA has the maximum number of school districts with a number of successive years of 5.

It is evident that the majority of school districts does not receive Section 5 payments during two or more successive years, since it is difficult for a school district to meet the eligibility requirements for more than one year. That is, the probability is rather low that during two successive years the terminal membership of 5(a)1 and 5(a)2 children minus the base year ADM of 5(a)1 and 5(a)2 children is larger than five % of the base year total ADM. We saw that in cases like Salina, Kansas, this low probability of receiving P.L. 815 payments in two or more successive years, may result in a significant difference between the financial burden placed on a school district (P_e) and the actual P.L. 815 payments (P). A possible solution to the obliteration of this difference is to include in the computation of the eligibility requirements, the increase in federally connected children during the years in which no P.L. 815 payments were received after the last year in which P.L. 815 payments were received. For instance, a school district applying for P.L. 815 payments in 1965 would include in the computation of the eligibility requirements, the increase in federally connected children in 1962, 1963, and 1964, if the last year in which the P.L. 815 payments were received was 1961. How would one include the above increase in federally connected children during the years in which no P.L. 815 payments were received? This would be done by adding this increase to the terminal membership of 5(a)1 and 5(a)2 children. The base year ADM of 5(a)1 and 5(a)2 children has to be subtracted from this sum. If the resulting figure is larger than 5% of the base year total ADM, a school district would be eligible for P.L. 815 payments; if the figure is smaller, the district would not receive P.L. 815 payments.

Table 61

NUMBER OF SCHOOL DISTRICTS IN EACH STATE WITH THE NUMBER OF SUCCESSIVE YEARS OF P.L. 815 ELIGIBILITY

States	1 yr	2 yr	3 yr	4 yr	5 yr	6 yr	States	1 yr	2 yr	3 yr	4 yr	5 yr	6 yr
Alabama	48	5	7	1	1		Nebraska	22	2	1			
Alaska	19	2	1				Nevada	25	4	1			
Arizona	73	16	6	2	1		New Jersey	68	7	3			
Arkansas	40	7	4		2		New Hampshire	11					
California	317	76	19	13	4	1	New Mexico	42	13	4			
Colorado	46	11	4	2			New York	70	7	3	2		
Florida	17	1	2	3	1		North Carolina	12	4	2		1	
Connecticut	36	4		1			North Dakota	16	3				
Delaware	5						Ohio	119	17	8		1	
Georgia	39	11	5	1	2	1	Oklahoma	150	28	2			
Idaho	32	5	2	1			Oregon	46	3	1			
Illinois	58	14				1	Pennsylvania	26	4	1			
Indiana	63	2	2				Rhode Island	33	3		2		
Iowa	34	1	1	1			South Dakota	34	12	6			
Kansas	83	14	8	1	1		Tennessee	34	13	2	1		
Kentucky	20	4	1	1			Texas	189	38	9	2	5	
Louisiana	26	3	2				Utah	11	3	5			
Maine	32						Vermont	33	12	4	2	2	
Maryland	11	8	2	1	1		Washington	121	22	9	4	2	2
Michigan	189	38	5	1			West Virginia	2	1				
Massachusetts	36	5					Wisconsin	16	1				
Minnesota	28		1				Wyoming	20	2				
Mississippi	34	1	1				Guam	1					
Missouri	90	21	2		1		Hawaii	2		1			
Montana	56	4	3				Puerto Rico		1				
							Total	2,535	459	140	42	25	6

The part of P.L. 815 payments not absorbed by school districts is the amount of dollars which is left over from the P.L. 815 payments after completion of the construction of minimum school facilities. What happens with these nonabsorbed P.L. 815 payments? The following procedure is established for nonabsorbed Section 5 payments:

1. The nonabsorbed payments go back to the federal government if the nonfederal share of total construction costs is zero.

2. The nonabsorbed payments remain with the school district if the school district did contribute to the total construction costs.

Appendix Table H-3 reports per state and per year the nonabsorbed payments that were reimbursed to the federal government during the period 1952-57. Table 62 gives the total of these reimbursements.

Table 62

SECTION 5 REIMBURSEMENTS

Year	Section 5 Reimbursement	Number of School Districts
1952	$ 438,874	1
1953	1,197,931	47
1954	571,733	36
1955	989,219	42
1956	2,568,744	36
1957	32,757	5

We notice from the table that the Section 5 reimbursements during 1956 were high compared with the other years.

What does this mean? It means either (1) that for the school districts with a zero nonfederal share of total construction costs, the financial burden placed on a school district as a result of an increase in federally connected enrollment was probably better met during 1956 than in the other years; or (2) that during 1956 there were more school districts with a zero nonfederal share of total construction costs than in the other years; or (3) that there were more school districts receiving P.L. 815 payments in 1956 than in other years. The third conclusion is not true, since there were more P.L. 815 payments made in 1952 and 1954 than in 1956, while the number of payments made in 1955 is of the same magnitude as the number of payments in 1956. There was not enough information available to investigate whether conclusion (1) or (2) is true for 1956.

Appendix Table H-3 discloses that there are districts in certain states, like California, New Jersey, Ohio, Michigan, and Tennessee, with reimbursements during four successive years (1953, 1954, 1955, and 1956). Lack of available information did not allow an examination about the significance of this observation. It may mean that during these years there were in the above states many school districts where P was larger than P_e.

Section 8, 9, and 14 Payments

There is little to say about the Section 8 and 9 payments, since the number (74) of these payments during the years 1952-64 was insufficient to perform a statistical analysis. The amounts paid out under Sections 8 and 9 are reported in Appendix Table H-4. This table includes all the payments similar to Section 8 and Section 9 payments during the years 1951-64.

Section 14 payments were for the first time introduced in 1954. There were also too few Section 14 payments during 1954-64 to make any conclusive observation. The amounts paid out under Section 14 can be obtained from the annual reports of the Commissioner of Education.* Table 63 shows the number of school districts in each state with the corresponding number of successive Section 14 payments. Number of successive Section 14 payments are here defined in a way similar to number of successive Section 5 payments.

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* Administration of Public Laws 874 and 815, Annual Reports of the Commissioner of Education, U.S. Department of Health, Education, and Welfare, Office of Education.

Table 63

NUMBER OF SUCCESSIVE SECTION 14 PAYMENTS

State or Territory	Number of Successive Years						
	1	2	3	4	5	6	7
Arizona	27	6	1		1		
California	8	1					
Colorado	1	1					
Idaho	5	1					
Minnesota	13	4	1				
Montana	21	2	4	1			
Nebraska	4						
Nevada	3						
New Mexico	4	3	5	2			1
North Dakota	6						
Ohio			1				
Oklahoma	55	12					
Oregon	1						
South Dakota	6	1					
Texas	1						
Utah		1					
Washington	7	2					
Wisconsin	11						
Wyoming	6		1				
Guam	1						
Total	180	34	13	3	1	0	1

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APPENDIXES

Appendix A

SAMPLING TECHNIQUES FOR MEASURING THE LOCAL REVENUE FROM FEDERALLY CONNECTED FAMILIES

By: Thomas R. Cockerline

Appendix A

I INTRODUCTION

This appendix has been written to provide the reader with a knowledge of sampling techniques for measuring L_f, the local revenue from federally connected residents.

Probability samples provide an estimate of L_f and, in turn, F_e, in which the error of the estimate is both controllable and measurable. Implementation of this technique requires careful definition of the population to be sampled and thorough evaluation of the tolerable sampling errors. The presampling analysis includes an investigation of the plausibility of sampling followed by a detailed study of its feasibility.

In Section II, which describes the general problem of measurement, the formula for computing allowable sampling errors is developed. Section III describes the important factors to be considered in evaluating the plausibility and feasibility of sampling and presents the problems encountered in designing an effective sample for Montgomery County, Maryland. Also described is the sampling plan and results of the sample performed for the Salina, Kansas, school district; this sample generated a very precise estimate of F_e. The calculated sample error for F_e was slightly over 1% at 95% reliability.

II DESCRIPTION OF THE PROBLEM OF MEASUREMENT

The need for an accurate measure of the local school district tax contribution by federally connected residents is discussed elsewhere in this report. This is necessary to establish a satisfactory estimate of the intradistrict equalizing payment, F_e, which is, under a specific hypothesis, the theoretical entitlement due a school district in order to offset a loss in personal and property tax revenues. This hypothesis interprets the intent of the law as that of offsetting such tax losses to the district.

Symbolically, the theoretical payment may be stated as follows:

$$(1) \quad F_e = \frac{L_n}{N_n} N_f - L_f$$

where:

L_n = local share of current expenses paid by property taxes other than federally connected families

N_n = ADA of nonfederally connected children

N_f = ADA of federally connected children

L_f = local share of current expenses paid by property taxes of federally connected families (including in-lieu-of-tax payments)

Measuring the tax contribution of federally connected residents is a formidable task, since the measures are not a part of those normally available from local government sources. Total local revenues, L, are known, and are the sum of the contributions from federally and nonfederally connected residences, i.e.,

$$L = L_n + L_f$$

Substituting in (1) above, F_e becomes,

$$F_e = \frac{L - L_f}{N_n} N_f - L_f$$

or

$$F_e = \frac{N_f}{N_n} L - \frac{N_f}{N_n} L_f - L_f$$

This can be further factored to

$$(2) \quad F_e = \frac{N_f}{N_n} L - \left(\frac{N_f}{N_n} + 1 \right) L_f$$

In the above equation (2), only L_f is subject to errors in measurement. In particular, it can be shown that the variance* of estimates of F_e derived from estimates of L_f have the following relationship:

$$(3) \quad \text{var } F_e = \left(\frac{N_f}{N_n} + 1 \right)^2 \text{ var } L_f$$

The value, L_f, is the product of the local tax rate and the assessed value of the federally connected residences, i.e.,

$$(4) \quad L_f = tV_f$$

where t = local tax rate ($ per dollar of assessed value)

V_f = total assessed value of federally connected residences.

Substituting the relationship (4) in (3) results in

$$\text{var } F_e = \left(\frac{N_f}{N_n} + 1 \right)^2 \text{ var } tV_f$$

which can be written as

$$(5) \quad \text{var } F_e = \left(\frac{tN_f + tN_n}{N_n} \right)^2 \text{ var } V_f .$$

---

* Variance is the square of the standard deviation--sometimes called the standard error of measurement. This measure enables one to state the precision and reliability of an estimate.

The value of the squared term in (5) will significantly influence the final error in the estimate of F_e. Hereafter, this squared term will be noted by the term K^2, i.e.,

$$K^2 = \frac{tN_f + tN_n}{N_n}^2$$

and (5) becomes

$$(6) \quad \text{var } F_e = K^2 \text{ var } V_f .$$

The precision and reliability measures that accompany an estimate describe its "accuracy" and subsequent usefulness as a measure of the characteristics for which it is intended. By precision is meant the percent of error in the measurement. Reliability states the related frequency of expectation that can be associated with the precision. For example, a 10% error at 95% reliability attached to an estimated measure, indicates that were the measurement technique repeated 100 times and a range of plus and minus 10% attached to each measure, this range would cover the "true" value 95 times.*

In this particular problem of measurement, the precision of the estimate of F_e can be noted as

$$\sigma_{F_e} = \sqrt{\text{var } F_e}$$

and the relative precision as

$$(7) \quad \frac{\sigma_{F_e}}{F} \quad \text{where } \hat{F}_e \text{ is the estimate of } F_e.$$

If the errors in the measurement of F_e are normally distributed with a standard deviation estimated by σ_{F_e}, then probability statements may be made about the range of the estimate. For a normally distributed variate, the range covered by the mean ± 1.96σ accounts for 95% of the area of the distribution function.

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* Morris H. Hansen, William N. Hurwitz, and William G. Madow, Sample Survey Methods and Theory, Vol. 1, John Wiley & Sons, 1953, pp. 121-126.

Thus, the measure

$$\hat{F}_e \pm 1.96\ \sigma_{F_e}$$

assuming a normal distribution, would account for 95% of the area of this distribution.

If the inequality

$$(8)\quad \frac{1.96\sigma_{F_e}}{\hat{F}_e} \leq .10$$

if satisfied, then the relative precision of 10% has been achieved with 95% reliability.

In order to generalize this result, the following symbols will be used:

R = reliability expressed as a multiple of the standard deviation of the estimate

P = precision expressed as a decimal.

Substituting in (8), the following inequality must be satisfied for the estimate to have a precision, P, with a reliability, R:

$$(9)\quad \frac{R\sigma_{F_e}}{\hat{F}_e} \leq P$$

Manipulation of (9) produces

$$\sigma_{F_e} \leq \frac{P\hat{F}_e}{R}$$

or, since var $F_e \leq \sigma_{F_e}^2$

$$(10)\quad \text{var } F_e \leq \frac{P^2\hat{F}_e^2}{R^2}.$$

Since V_f (assessed value of the federally connected residences) is the measure to be estimated, the relationship of equation (6) is substituted in (10) and becomes

$$K^2 \text{ var } V_f \leqq \frac{P^2 \hat{F}_e{}^2}{R^2}$$

or

$$\text{var } V_f \leqq \frac{P^2 \hat{F}_e{}^2}{K^2 R^2}$$

which is equivalent to

$$\text{(11)} \quad \sigma_{V_f} \leqq \frac{P\hat{F}_e}{KR} \,.$$

Equation (11) states the maximum allowable value for the standard deviation of the estimate of V_f in order that the resulting estimate of F_e achieve a specified precision P with reliability R.

The relative precision of the estimate of V_f is given by

$$C(V_f) = \frac{\sigma_{V_f}}{V_f}$$

which in terms of equation (11) becomes

$$\text{(12)} \quad C(V_f) = \frac{\sigma_{V_f}}{V_f} \leqq \frac{P\hat{F}_e}{V_f KR} \,.$$

Equation (12) states in a very useful form the amount of error in measurement of V_f that can be tolerated for the stated precision and reliability of the resulting estimate of F_e. The use of equation (12) is illustrated in the following example for Montgomery County, Maryland.

It is desired to estimate for the Montgomery County School District the value of F_e with a precision of 10% at 95% reliability. Estimates of F_e and V_f developed by other means for Montgomery County (see Montgomery case study in Volume II) are shown below and were used for the terms in equation (12)

$(P = .10,\ R = 1.96)$

F_e = \$4,600,000 (estimated theoretical entitlement)

V_f = \$376,000,000 (estimated assessed value of federally connected residences)

and for $K^2 = \dfrac{tN_f + tN_n}{N_n}^{\,2}$

t = .0218 (the tax rate, i.e., 2.18 mils)

N_f = 28,536 (number of federally connected children)

N_n = 53,962 (number of nonfederally connected children).

Thus,

$K^2 = .001111$

$K = .033331$

and therefore

$$C(V_f) = \frac{\sigma V_f}{2f} \leq \frac{(.10)(4,600,000)}{(376,000,000)(.033331)(1.96)} = .0187 \text{ (or } 1.87\%)$$

This means that an error no greater than 1.87% in the estimate of assessed value of federally connected residences can be tolerated if F_e is to have a precision of 10% at 95% reliability. This is an extremely difficult requirement to satisfy in an estimate such as this. The very small value of K is greatly responsible for this result.

III SAMPLING TECHNIQUES FOR MEASURING ASSESSED VALUES OF FEDERALLY CONNECTED RESIDENCES

The relationship of the accuracy of the estimate of L_f to the resulting accuracy in the estimate of F_e has been developed. Under certain conditions determined by the characteristics of the school district, considerable accuracy in the estimate of L_f is required in order that the resulting estimate of F_e possess acceptable accuracy. Probability sampling techniques should be utilized if feasible, since sample-derived estimates provide an estimate whose accuracy is measurable and controllable. The more important considerations in designing and implementing a probability sample to measure L_f are described below.

Plausibility

The first consideration is the plausibility of sampling. Questions such as the requirement for accuracy in the estimate of L_f, the availability of a suitable sampling frame, and the expected response are critical at this point.

The availability of a suitable sampling frame, i.e., a listing of all elements of the population to be sampled, is usually evaluated first. A directory of all persons working at a military base, or a tax assessor's listing of all properties within a school district are examples of sampling frames. Such sampling frames must be current, complete without duplication, and contain enough information about each item in the list so that the required sample measure can be readily obtained either directly from the sampling frame or from some other source to which the sampling frame information provides a direct linkage.

Any segments of the population omitted from the sampling frame should be known and either directly measurable or some other access to their measurement established. If the sampling frame is not current, methods for determining the changes should also be established. Each element in such a listing is designated in sampling terminology as a primary sampling unit (psu). Probability sampling theory requires that each of these psu's have equal probability of being drawn into the sample. Thus, all duplication of the psu's must be removed or at least avoided when the sample is drawn.

Obviously, a sampling frame that provides neither the sample measurement required nor a linkage to a source for the measure is of no value. It is quite important that this linkage be completely established in evaluating the plausibility of a probability sample. For example, consider the use of a personnel directory as the sampling frame, where it is intended that the addresses contained in the listing be cross-referenced with an assessor's records to obtain the desired assessed value data. If a significant number of the psu's in the listing contain a post-office box number as an address, the problem of measurement would become much more difficult.

Feasibility of Sampling

After the plausibility of probability sampling has been established, the major feasibility consideration is the cost subject to the precision and reliability constraints. The major components of cost are:

1. Preparation of sampling frame.
2. Special sample design considerations, e.g., formation and identification of strata, rearrangement of psu's for cluster sampling, allocation of sample.
3. Drawing the sample.
4. Enumeration of the sample.
5. Follow-up on nonresponses.
6. Computation of estimates and errors.

Depending upon the special characteristics of the population to be sampled, these costs vary considerably. Items 1, 2, and 6 tend to be fixed costs, i.e., invariant to the size of the sample. Items 3, 4, and 5 are those costs that vary with the size of the sample.

In the case studies of this research project, two school districts were evaluated for the feasibility of conducting a probability sample to measure L_f (one of the districts was sampled, the other was not, because of time, cost, and accuracy considerations). The fixed costs were high relative to the variable costs in the district sampled (Salina, Kansas). The final sample size greatly exceeded that required to obtain an acceptable precision and reliability in the estimate of F_e for Salina because of the very low variable costs. In the district not sampled (Montgomery County, Maryland), the variable costs were high relative to the fixed costs.

The rigid precision and reliability requirement for the estimate of L_f in Montgomery County obviated any possibility for sampling during this research study. An estimate of F_e with a precision of 10% and 95% reliability would be required in order to make reasonable comparisons between the estimated F_e and the actual entitlement. This, in turn, means that the assessed value of federally connected residences must be estimated with a relative precision of approximately 1.9%--an extremely tight requirement. These calculations, shown in Section II, are based on certain assumed characteristics of the population. Even under the most efficient sample design, a fairly large sample would have been required to satisfy this requirement (although relative to percent, this would have been about one-fourth the sample taken in Salina, Kansas, i.e., 5% vs 20%).

Sample Design Considerations

Evaluation of alternative sample designs is an integral part of the sampling feasibility study. Sample designs may range from the most simple unrestricted random sample design to comparatively sophisticated designs employing stratification, clustering, or sampling in stages, i.e., sampling by one design a group of elements containing a portion of the psu's and then subsampling the psu's within these first-stage sampled elements.

Stratification of the psu's is usually done to minimize the error in the estimate. In this method the psu's are arranged into groups possessing similar values of the characteristic to be measured. Each stratum is then sampled independently as if it were a unique population, and the estimates by stratum are combined to form a total population estimate. The sampling error is reduced because of the homogeneity of the psu's within each stratum. Always, when special sample designs are utilized, the random sampling feature is preserved. Thus, in stratified sampling, the randomness occurs within the independently sampled strata.

The problems confronted in Montgomery County, Maryland, are an interesting example of sample design considerations. The need for an extremely precise estimate has already been discussed. In order to achieve the precise estimate, careful study was made of plausible alternative designs; quite obviously, a simple unrestricted random sample would be prohibitively costly.

Possible sampling frames considered were directories of government employees and the punched card property records maintained by the

Montgomery County Assessor's Office.* The former was rejected for two reasons. First, sampling from directories would not allow the introduction of any efficiencies in sample design, such as stratification, needed to attain the rigid precision required (except possibly at a very inefficient level). Second, it would have been necessary to gather several hundred directories, with no assurance that the entire population of residents with federal connection was covered in these directories.

The assessor's punched card records offered the best opportunity for an efficient sample design. Use of this sampling frame would require a sampling of addresses of parcels followed by an enumeration of the sample parcels to determine whether or not the residence was federally connected. The primary sampling unit is each dwelling unit. Thus, for residential zoned parcels, the parcel and psu are synonomous. Parcels zoned for apartments or other multiple dwelling unit residences are defined so that the number of psu's in a parcel equals the number of dwelling units in the parcel. The number of dwelling units per parcel in the nonresidentially zoned properties is not carried in the punched cards, and was to be obtained elsewhere.

The punched card records are useful from a sampoing point of view because each punched card contains the total current assessed value and the address of the parcel. Consequently, the cards could be so stratified that each stratum contained an extremely narrow range of assessed values per psu. By sampling independently from each of these stratum and subsequently enumerating the dwelling units for federal connection of residence, sources of error due to variation in assessed value are eliminated. A small and measurable bias in the estimate would occur using this method.

A telephone book ordered by street and address is available for Montgomery County and provides the linkage for enumeration. The number of children attending district schools was to have been enumerated along with the establishment of federal or nonfederal connection. The questions to be answered by respondents were: name and address (including building number) of employer, company, agency, or government agency; exact location of employment, exact address of payroll office, if Army, Navy, Air Force, or Coast Guard--location of base or name of ship. These questions were to be answered by both parents.

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* The parent survey forms maintained by the school district used for identifying children of federally connected families could not be used as a sampling frame, because the population defined by those forms includes only families with children attending district schools. To fully evaluate property value associated with federal connection it is necessary to include the property of all federal families including those without public school children.

Multiple dwelling unit parcels would have been arranged in strata of equal assessed value per dwelling unit. A real estate listing book prepared by an independent organization listed all parcels in Montgomery County. Apartment zoned parcels were listed with the number of apartments in the improvement.

An analysis of estimated sampling errors was made for the sample design for the single-family residential stratum and is shown in Table A-1. This stratum accounts for about 90% of the population of psu's. The proportion of federally connected psu's in each of the substratum is critical to the determination of stratum variance (i.e., sampling error) and was estimated in order to perform this analysis.* The method was crude; however, it presents a likely situation confronting the sample design and provides a reasonable estimate of variance. The stratum variance is directly proportional to the product p(1-p). The product is at a maximum when p equals one-half. Consequently, the highest variances occurred for the substratum estimated to have 30% federal connection, the highest estimated proportion of federal connection in the substrata.

This analysis was conducted on the assumption that the number of psu's sampled would be 1,400 in the residential zoned parcels and 600 from the multidwelling unit parcels. This sample size was based on an estimate of sampling costs and was determined to be the maximum sample size the research project could afford. For purposes of this analysis, the sample size within each substratum of the residential stratum was allocated proportionally on the basis of total assessed value within the substratum. For example, substratum 1 is estimated to have a total assessed value of $273.5 million. This is 19.5% of the total assessed value within the stratum. Thus, 19.5% of the psu's in the substratum were to be sampled resulting in a sample size of 251.† This allocation procedure, although not optimum, is adequate, inasmuch as optimum allocation would require more accurate knowledge of the population.

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* Income distribution data from the census of population for Montgomery County was used in combination with published data on the distribution of income of government employees in the Washington, D.C. metropolitan area. From these data, estimates were made of the proportion of government employees in each income group. A distribution of the assessed values of residences in Montgomery County was developed from other census of population data. The government employees by income group proportions were applied to the assessed value distributions, resulting in a rough estimate of the proportion of federal employees by assessed value substrata.

† A certainty (total count) substratum was formed consisting of the 100 largest psu's. This stratum would be completely enumerated rather than sampled. The remainder of 1,200 was to be drawn from the other substrata.

Table A-1

ESTIMATED VARIANCE CONTRIBUTIONS
SINGLE-FAMILY RESIDENCES*

Strata	Substrata	Average Assessed Value V_1	Estimated Number of Psu's N_1	Sample Size n_1	Estimated Proportion Federally Connected p_1	$p_i(1-p_i)$	Variance var $V_{fi} \div 10^9$
Single-Family Residential	0 (certainty)	$75,000	100	100	-	-	-
	1	65,000	3,900	251	.01	.0099	2,381
	2	42,000	3,600	150	.02	.0196	2,882
	3	29,000	3,600	104	.10	.0900	9,250
	4	21,000	3,600	75	.15	.1275	9,645
	5	16,500	3,600	60	.20	.1600	9,408
	6	13,500	13,500	182	.25	.1875	33,953
	7	10,500	25,600	269	.30	.2100	56,053
	8	7,500	20,100	151	.30	.2100	31,615
	9	4,500	10,700	48	.20	.1600	7,869
	10	2,000	1,700	10	.10	.0900	115
	Total		90,000	1,400			163,171

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* These data were prepared solely for estimating total variances from a sample estimate and are a very rough order of magnitude estimates. They should not be used for any other purposes.

Source: Stanford Research Institute

The estimated contribution to the variance from each of the substratum is shown under the column headed Variance (Table A-1). Substrata 6, 7, and 8 with estimated federal connection proportions of .25, .30, and .30, respectively, accounted for nearly 75% of the total variance within the residential strata.

The total variance contribution from the single family residential stratum (to which must be added the variance from sampling the multi-dwelling unit stratum) is estimated as 163,191 x 10^9. It was previously mentioned that in order for the error of the estimate of F_e to be acceptable, the relative precision of the estimate must be equal to or better than 1.87%. This means that the variance of the estimate must be less than 49,000 x 10^9. Thus, if the variance of the sample of all residential properties is not to exceed this constraint, a variance contribution of about 35,000 x 10^9 from the single family residential properties would be tolerable or a reduction down to about 21% of the 163,191 x 10^9 estimate for the 1,300 sample size.* If this were to be achieved by increasing the sample size, the sample in substratum 7, for example, would need to be increased from 182 to approximately 1,200 of the 25,600 psu's in the population or a sample of nearly 5%. Extended to entire population of parcels of all zone type, this would mean a sample of approximately 5,000 psu's--a prohibitively large number for this study.

The Salina, Kansas, Sample

An actual sample was performed in Salina, Kansas. Several sampling plans were evaluated, and the plan implemented was a systematic random sample drawn from the Schilling Air Force Base directory of personnel stratified into four strata: civilian males, single civilian females, officers, and enlisted men. The requirement for accuracy in the estimate of V_f as related to the accuracy in F_e was not rigid as compared with Montgomery County. Thus, a more sophisticated sample design was not necessary. Furthermore, the assessor's records are kept manually, which precludes any opportunity for quick and relatively inexpensive manipulation of these records as a sampling frame.

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* The allowable variance contribution of 35,000 x 10^9 from the single family residential stratum is the proportionate share of the total allowable variance of 49,000 x 10^9. This was based on an analysis of estimates of the assessed value in the other strata and expected variances under the same sampling plan.

Rough estimates were made of V_f and F_e prior to sampling for V_f and were used to estimate the amount of sampling error that could be tolerated. The estimates and the computation of the allowable relative precision of the estimated V_f are shown below* (see Equation (12)):

$$P = .10$$
$$R = 1.96$$
$$\hat{F}_e = \$600,000$$
$$V_f = \$6,400,000$$

and for

$$K^2 = {\frac{tN_f + tN_n}{N_n}}^2$$

$$t = \$\ .0304$$
$$N_f = 2,775$$
$$N_n = 8,733$$

Thus

$$K^2 = 16.049 \times 10^{-4}$$
$$K = 4.0061 \times 10^{-2}$$

and therefore

$$C(V_f) = \frac{\sigma_{V_f}}{V_f} \leq 0.12 = 12\%$$

Thus, the relative error of the estimate of V_f could be as large as 12% and still provide an estimate of F_e with a precision of 10% at 95% reliability. Remember that these same requirements on the estimate of F_e in Montgomery County required a measure of V_f with a relative error slightly less than 1.9%.

The steps in conducting this sample were as follows:

1. Salina addresses from the Schilling directory were sorted into officers, enlisted men, civilian males, and single civilian females. Based on a 20% sample, it was found that over 92% of the married civilian females were secondary earners, employed at the base; married females were therefore not considered further in determining L_f.

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* 1963 Data

2. From an official summary report of personnel at Schilling AFB (DD report 1377), it was determined that the directory was about 9% short of the official count. Inquiries at the base disclosed that some personnel had chosen not to be listed in the Schilling directory, but the shortage was deemed small enough that an assumption of identity with the sampled population could be made without risk of serious error.

3. A small number of bachelor officers were found to be sharing apartments or houses in Salina with other officers. When the number of federally connected housing units was adjusted for such duplication, there were determined to be 447 units occupied by officers, 1,755 by enlisted men, 190 by civilian males, and 16 by single civilian females, for a grand total of 2,408 units. This was 16.1% of the estimated total of 14,900 Salina dwelling units in 1964.

4. A random sample of one in five Salina names and addresses from each of the strata were taken to the Salina County Clerk's office, where real and personal property valuations relating to each housing unit in the population being sampled were obtained. The real property valuation for personnel living in multiple dwelling units (duplexes, apartments, and trailer courts) was taken as the total valuation of the property divided by the number of units, except for the considerable number of large Salina homes in which spare rooms had been equipped and rented to military personnel as apartment units. For such homes, the valuation of the special apartment unit was usually available from the county clerk's records.

5. The total valuation of federally connected housing units, V_f, was then computed to be $4.44 million.* Total assessed valuation for the Salina Board of Education in 1964 (V) was $62.33 million, giving a ratio of .071 for V_f/V. This ratio was increased to

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* Mean values of housing units were estimated to be $1,840 for the total federally connected sample, $2,660 for officers, $1,590 for enlisted men, $2,240 for civilian males, and $2,300 for single civilian females, compared with an estimated mean for nonfederally connected housing units of $2,570. A post-sample stratification of enlisted men showed a mean housing unit valuation of $158 for the 217 enlisted men in trailers, and $1,740 for the 1,538 enlisted men in other housing.

.075 for FY 63, because of a larger ratio of 3(b) to total non-3(a) ADA than in the fall of 1964, the ratio .075 when multiplied by total property tax revenues (Table S4, line a, in Salina case study) produced the L_f of $132,200 for FY 63.

The estimates by stratum and the variance contribution of each is tabled below:

Strata	$\hat{V}_f$	Variance V_f
Civilian males	$ 426,360	806.34×10^6
Single civilian females	36,880	39.55×10^6
Officers	1,189,914	$1,426.10 \times 10^6$
Enlisted men	2,785,185	$3,580.10 \times 10^6$
	$4,438,339	$5,852.49 \times 10^6$

The precision of this estimate of V_f is ± 3.44% at 95% reliability. Extended to the estimate of F_e, the resulting error in F_e (for F_e estimated as $595,900) is slightly over 1% at 95% reliability.

Appendix B

SUGGESTIONS FOR ADDITIONAL RESEARCH

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SUGGESTIONS FOR ADDITIONAL RESEARCH

The main task of the research contained in this report was to evaluate the operations of Public Laws 874 and 815. The research was devoted to analyzing the major purposes of the law and studying how the laws have operated in federally affected school districts. Several items of importance remain to be studied. These are described below in varying amounts of detail.

If the decision is reached that all states should establish groups of comparable districts for determining the LCR of an entitled district, then study is needed to determine the proper procedure for grouping within each state. The present system does not appear to be sufficiently systematic, either in terms of number of groups, or methods of designating groups. On the other hand, the wide differences in school district organization between states preclude establishing a single grouping procedure proper for all states. Study is needed to establish the proper system for each state by type of school district organization.

One system of grouping would reflect characteristics of the districts that create differences in costs of education per pupil; e.g., elementary school districts have lower costs per pupil than do high school districts; districts with a large proportion of low income families requiring remedial work may have higher costs than do districts with a high proportion of upper income families, etc. Other factors besides cost should be considered in establishing groups, such as (1) inherent differences in ability to raise local funds for education; and (2) desires to achieve efficiency of operations (e.g., groupings of very small, high cost districts may be omitted to avoid perpetuating the inefficiencies of fragmented school districts).

Many amendments have been proposed by the SAFA division and others to improve the operational efficiency of the laws, especially P.L. 874. Those concerned with the basic operation of the law have been covered in this study (i.e., those relating to eliminating the comparable district option, eliminating the minimum rate provisions, changing the 3(b) payment ratio, and changing the eligibility requirements). Many others have been proposed that either affect only a segment of the entitled population, or relate to administrative procedures, these have not been covered in this study. Some of them are: (1) make appropriations for two years instead of one; (2) eliminate eligibility for 13th and 14th grade pupils; (3) eliminate the exclusion of federal persons connected with so-called community service activities; (4) eliminate deductions from gross entitlement; (5) make payments for pupils whose fathers are attached to a federally owned ship; and (6) discontinue assistance to districts in any state that prohibits expenditure of state or local funds for the education of children living on federal property. Many of these warrant consideration, and should be included in an analysis of administrative procedures. Time has not permitted us to investigate these in this study.

One proposal of importance, because of the sums of money said to be involved, is the elimination of out-leased property from eligibility. Although we have not studied this problem, it deserves somewhat longer comment here because of its importance.

Out-leasing occurs when the federal government leases federal property to a private organization. This property is subject to local tax; the taxes are deducted from the gross entitlement of the district within which the property is located. However, pupils whose parents work on the out-leased property are eligible for entitlement under P.L. 874. An amendment was proposed by the Office of Education to eliminate out-leased property from eligibility on the grounds that it was subject to local property tax and therefore was similar to privately owned property. In making this recommendation, the Office of Education estimated that $50 million would be saved by incorporating the amendment.

We have been unable to investigate this problem in the course of this research, but suggest that the problem is far more complex than indicated in the Office of Education amendment. First, although the property is subject to tax, the taxing procedures permitted in each state with regard to these properties are varied. Much of the property is not subject to tax in the same manner as is private property. Second, the school districts not attached to the property will still be burdened by the children whose parents work on the property; and third, the determination of the amount of funds to be saved appears very complex.

To determine the amount of money saved it is necessary to proceed as follows:

1. Determine the list of school districts associated with the property. The list will undoubtedly be long, since most of these out-leased properties are large. (Note: In three California examples shown to us, the number of school districts associated with each were 31, 36, and 46.)

2. For each associated school district, the records must be examined to determine the number of pupils entitled because of the out-leased property. (Note: It cannot be assumed that all the district property is so connected, especially in urban areas.)

3. For each district, the number of associated pupils must be multiplied by their effective local contribution rate, and then added across all the associated school districts.

4. From this total, the deductions already taken for the taxes paid on this property must be subtracted to arrive at the net saving associated with that particular property.

This procedure must be repeated for all out-leased property.

Appendix C

SOURCES AND USES OF DATA FOR STATISTICAL ANALYSES

Appendix C

SOURCES AND USES OF DATA FOR STATISTICAL ANALYSES

Three kinds of information were used for the general statistical analyses: (1) data on entitlement under P.L. 874 and federally connected ADA, obtained from the Financial and Statistical Record (Form OE-A-147-Revised) maintained by the U.S. Office of Education, SAFA; (2) data on financial characteristics of school districts, obtained from the U.S. Office of Education, Statistics of Local Public School Systems for the School Year 1959-1960; and (3) data on the socioeconomic characteristics of school districts, obtained from Jerry Miner, Social and Economic Factors in Spending for Public Education (Syracuse University Press, 1963).

Selected data were abstracted from the entitlement records of the Office of Education for 1959, 1960, 1961, and 1962. The data were transferred from handwritten records to punchcards and subsequently converted to magnetic tape records for computer processing. These data were carefully edited and subjected to all reasonable validity checks. The tape records include the following: (1) gross entitlement, (2) deductions, (3) net entitlement by section of P.L. 874, (4) ADA by section of the law, (5) LCR for Section 3, (6) total ADA of the school district and (7) current expenses of education of the school district.

School finance data were obtained from a nationwide sample of about 6,000 school districts conducted in 1960 by the Office of Education. Each state was sampled independently by the Office of Education in selecting the Office of Education sample districts. The school districts of each state were stratified into two strata, one consisting of the larger school districts; the second, of the remaining districts. The stratum of the larger districts formed a certainty stratum which was completely enumerated, i.e., a 100% sample of these districts were taken. The remaining districts formed a non-certainty stratum from which a random sample of the school districts was made.

Professor Miner's study of socioeconomic characteristics comprises a sample of approximately 1,100 school districts in 23 selected states. The school districts are a subsample of those included in the Office of Education survey described above.

The 23 states included in Dr. Miner's Syracuse study are a random sample of states from each of the two strata, one, of states with property equalization; one of states without. All school districts with fewer than 300 pupils were eliminated from the Office of Education sample of school districts in each of the selected states. Therefore, the Syracuse sample is biased toward the larger school districts. However, the bias is small when measured by the percent of pupils enrolled--the less than 300 enrollment school districts accounting for less than 4% of pupils enrolled. The Office of Education sample of school districts was further reduced to a maximum of 80 sample districts in each of the 23 states. This was accomplished by random selection in those states with Office of Education sample exceeding 80 districts. A part of the information developed in the Syracuse study required questionnaires directed to each of the sampled school districts. The response rate on these questionnaires was about 65%, a further reduction in the Office of Education sample. The amount of additional bias contributed by the 35% nonrespondent districts is not known. The Syracuse study estimated the socioeconomic measure for each of its sample districts when, because of lack of coterminality, published sources did not include data that applied directly to the area proscribed by the school district.

The sample districts were classified in this study into federally entitled and nonentitled categories. Each entitled district included in the tape records prepared by this study is identified by the SAFA four-digit project number. Cross-referencing of the entitled school districts with those in the Office of Education study required manual matching by name and location of the school district. Undoubtedly errors occurred, although validity checks were made in the ADA and TCE of the matched records. Mean values of each of the financial and socioeconomic measures were computed for the two categories of school districts for each of eight Office of Education regions (see Table C-1). The estimates of the regional national means were derived by first performing a postsampling stratification to obtain the two sample means for the entitled and nonentitled district categories within each state's noncertainty stratum. The two sample means were not expanded by their sampling fractions,* thus creating a potential source of bias; however, since regional and national differences between the means were mutually consistent, it may be concluded that the bias is not serious. The regional and national averages were obtained by summing the estimated state totals and dividing by the sum of the appropriate number of school districts in each of the two entitlement categories.

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* The number of entitled districts and nonentitled districts was calculated for the noncertainty stratum of each state by matching a complete set of records for entitled districts with the Office of Education sampled district records for the year 1960 which are identified by sample stratum. The ratio of sample district observations for an entitlement category to the count of the total for that category provided the sampling fractions.

The estimates derived in this manner do not account for population differences between school districts. Each school district is given equal weight, thereby resulting in an estimated mean which averages the incidence of the socioeconomic measures rather than the absolute value for each of the sample observations. Thus, the measures reflect differences in socioeconomic characteristics of school districts, and not necessarily differences averaged for all people in school districts.

NOTES TO TABLE C-1

Key to the 19 Characteristics

1. TCE/ADA ($/ADA)
2. Instruction costs/TCE
3. Transportation costs/TCE
4. Elementary ADA/total ADA
5. Elementary: pupils/teacher
6. Secondary: pupils/teacher
7. Local & intermediate revenue/ADA ($/ADA)
8. State & federal revenue/ADA ($/ADA)
9. Local & intermediate revenue/total revenue
10. Median family income ($)
11. Population density
12. % in nonpublic schools (%)
13. Median years of education
14. % in white collar occupations (%)
15. % with incomes over $10,000 (%)
16. % of children under 18 (%)
17. % of nonwhite residents (%)
18. % moved into school districts in last 5 years (%)
19. Salary of beginning teacher ($)

Means for Each Characteristic

Row 1 = Number of observations in sample
Row 2 = Means
Row 3 = Standard deviation

Tests of Differences for Each Characteristic

Row 1 = Difference of the means
Row 2 = Standard error of the difference
Row 3 = Test of standard error, i.e., number of standard deviations between means

Options

2, 3, & 5 = 1/2 state or national expenses of education
6 = Local selection of comparable districts

Table C-1

MEANS FOR ENTITLED (SAFA) AND NONENTITLED (NOT SAFA) DISTRICTS:
TEST OF DIFFERENCES BETWEEN MEANS BY ENTITLEMENT, LCR OPTION, AND
PROPORTION OF FEDERAL OUT-COMMUTERS

REGION 1

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
1	495	130	6	124	20	110	-4.87	-118.71	-4.11
	342.44	347.30	234.07	352.78	343.82	347.94	8.190	11.607	18.112
	107.19	75.52	23.49	72.82	74.22	76.07	-0.594	-10.228	-0.227
2	495	130	6	124	20	110	-0.06	-0.05	0.01
	0.69	0.75	0.70	0.75	0.76	0.74	0.007	0.026	0.013
	0.09	0.06	0.06	0.06	0.05	0.07	-8.047	-1.871	0.916
3	495	130	6	124	20	110	0.04	0.05	-0.01
	0.11	0.06	0.11	0.06	0.05	0.06	0.007	0.018	0.011
	0.09	0.06	0.04	0.06	0.04	0.06	6.845	2.598	-1.273
4	495	130	6	124	20	110	0.02	0.15	-0.03
	0.72	0.70	0.85	0.69	0.67	0.71	0.020	0.079	0.041
	0.27	0.18	0.19	0.17	0.17	0.18	1.198	1.954	-0.826
5	468	130	6	124	20	110	-0.91	5.87	-1.31
	24.04	24.95	30.55	24.68	23.84	25.15	0.431	2.751	0.677
	5.46	3.97	6.69	3.42	2.46	4.16	-2.102	2.132	-1.930
6	287	102	3	99	17	85	-1.54	-3.05	0.07
	17.86	19.39	16.43	19.48	19.45	19.38	0.348	3.374	0.575
	3.61	2.78	5.83	2.65	1.98	2.92	-4.413	-0.904	0.117
7	495	130	6	124	20	110	30.82	-102.00	-45.73
	341.07	310.24	212.96	314.95	271.55	317.28	11.611	40.811	26.673
	160.79	103.61	97.42	101.92	111.22	101.11	2.655	-2.499	-1.714
8	495	130	6	124	20	110	1.16	15.16	33.80
	96.73	95.57	110.03	94.87	124.16	90.37	6.595	25.951	18.787
	79.90	63.07	52.02	63.28	80.25	58.37	0.176	0.584	1.799
9	495	130	6	124	20	110	0.01	-0.12	-0.09
	0.77	0.76	0.65	0.77	0.69	0.77	0.013	0.069	0.038
	0.15	0.13	0.17	0.13	0.16	0.12	0.911	-1.709	-2.319

Table C-3 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 4	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
10	77	47	0	47	7	40	427.19	-6434.21	478.48
	6861.40	6434.21	0.00	6434.21	6861.43	6362.95	190.715	128.525	484.693
	1236.41	881.13	0.00	881.13	1237.58	803.20	2.240	-50.062	0.987
11	77	47	0	47	7	40	2.02	-14.80	-4.45
	16.83	14.80	0.00	14.80	11.02	15.47	4.386	3.067	4.481
	27.51	21.02	0.00	21.02	7.16	22.59	0.461	-4.827	-0.994
12	77	47	0	47	7	40	1.68	-15.66	-5.31
	17.34	15.66	0.00	15.66	11.14	16.45	1.944	1.434	2.787
	11.52	9.83	0.00	9.83	6.01	10.21	0.863	-10.917	-1.904
13	77	47	0	47	7	40	-0.14	-11.40	0.36
	11.26	11.40	0.00	11.40	11.71	11.35	0.253	0.182	0.557
	1.55	1.25	0.00	1.25	1.38	1.23	-0.570	-62.790	0.654
14	77	47	0	47	7	40	2.15	-42.91	2.79
	45.06	42.91	0.00	42.91	45.29	42.50	1.745	1.336	4.169
	9.85	9.16	0.00	9.16	10.31	9.02	1.232	-32.127	0.671
15	77	47	0	47	7	40	3.57	-17.81	4.59
	21.38	17.81	0.00	17.81	21.71	17.13	1.785	1.152	4.244
	11.96	7.90	0.00	7.90	10.81	7.24	1.999	-15.453	1.081
16	77	47	0	47	7	40	-0.94	-35.38	0.05
	34.44	35.38	0.00	35.38	35.43	35.38	0.592	0.506	1.283
	2.70	3.47	0.00	3.47	3.05	3.57	-1.591	-69.955	0.042
17	77	47	0	47	7	40	0.18	-1.64	0.76
	1.82	1.64	0.00	1.64	2.29	1.52	0.364	0.216	0.530
	2.57	1.48	0.00	1.48	1.25	1.50	0.494	-7.585	1.435
18	77	47	0	47	7	40	-5.25	-17.70	2.70
	12.45	17.70	0.00	17.70	20.00	17.30	1.405	1.120	3.417
	7.44	7.68	0.00	7.68	8.47	7.58	-3.735	-15.800	0.790
19	77	47	0	47	7	40	91.62	-4151.06	23.93
	4242.69	4151.06	0.00	4151.06	4171.43	4147.50	45.762	32.775	105.285
	280.24	224.70	0.00	224.70	262.77	221.00	2.002	-126.653	0.227

REGION 2

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2+3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
1	445 453.02 161.12	77 428.93 103.45	16 461.98 95.55	16 546.60 99.69	18 418.31 96.67	59 433.39 105.82	24.09 14.047 1.715	-84.62 34.521 -2.451	-19.08 28.625 -0.717
2	445 0.70 0.07	77 0.70 0.08	16 0.65 0.04	16 0.66 0.12	18 0.69 0.07	59 0.70 0.09	0.00 0.010 -0.477	-0.01 0.032 -0.408	-0.01 0.021 -0.503
3	445 0.05 0.06	77 0.07 0.09	16 0.07 0.07	16 0.06 0.15	18 0.08 0.07	59 0.06 0.09	-0.01 0.010 -1.347	0.01 0.041 0.323	0.02 0.020 0.930
4	445 0.62 0.23	77 0.64 0.18	16 0.61 0.16	16 0.54 0.19	18 0.64 0.12	59 0.64 0.20	-0.01 0.023 -0.523	0.07 0.062 1.106	0.01 0.038 0.138
5	427 23.71 4.59	76 24.34 3.28	16 24.53 3.80	15 22.76 3.34	18 25.04 3.92	58 24.13 3.05	-0.63 0.436 -1.443	1.77 1.283 1.382	0.91 1.008 0.904
6	332 19.10 8.55	60 19.37 2.02	14 18.73 2.06	15 18.92 2.19	15 20.03 2.09	45 19.15 1.98	-0.27 0.536 -0.507	-0.19 0.789 -0.239	0.88 0.614 1.429
7	445 330.64 224.36	77 297.61 176.95	16 218.53 81.84	16 457.08 241.00	18 243.01 165.10	59 314.27 178.42	33.03 22.799 1.449	-238.55 63.631 -3.749	-71.25 45.321 -1.572
8	445 241.82 285.95	77 243.78 123.81	16 378.07 77.34	16 235.66 110.10	18 269.91 121.37	59 235.81 124.47	-1.96 19.566 -0.100	142.41 33.636 4.234	34.10 32.878 1.037
9	445 0.57 0.27	77 0.54 0.23	16 0.38 0.12	16 0.44 0.14	18 0.45 0.24	59 0.56 0.22	0.03 0.029 1.112	-0.28 0.046 -5.983	-0.11 0.062 -1.749

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
10	145	30	6	7	10	20	45.80	-1755.31	-423.00
	6421.50	6375.70	5640.83	7394.14	6093.70	6516.70	281.167	600.693	445.114
	1752.12	1317.76	646.04	1427.47	989.10	1470.02	0.163	-2.922	-0.950
11	145	30	6	7	10	20	4.82	-58.04	-1.51
	28.73	23.91	1.20	59.24	22.91	24.41	8.263	16.387	17.083
	54.26	37.94	0.81	43.35	48.84	32.65	0.584	-3.542	-0.088
12	145	30	6	7	10	20	-1.02	-15.14	-1.90
	17.05	18.07	12.00	27.14	16.80	18.70	2.340	5.832	4.241
	11.23	11.75	5.90	14.05	9.92	12.77	-0.435	-2.597	-0.448
13	145	30	6	7	10	20	0.36	-1.29	-0.35
	10.79	10.43	10.00	11.29	10.20	10.55	0.244	0.512	0.434
	1.31	1.19	0.89	0.95	1.03	1.28	1.477	-2.509	-0.807
14	145	30	6	7	10	20	-1.36	-16.40	-3.20
	42.27	43.63	36.17	52.57	41.50	44.70	2.221	3.402	3.434
	12.84	10.67	3.71	8.06	6.55	12.24	-0.614	-4.822	-0.932
15	145	30	6	7	10	20	1.03	-14.98	-4.45
	19.59	18.57	12.17	27.14	15.60	20.05	2.186	4.867	3.230
	13.55	10.27	4.07	12.10	5.99	11.70	0.469	-3.077	-1.378
16	145	30	6	7	10	20	-1.44	2.71	1.35
	34.86	36.30	38.00	35.29	37.20	35.85	0.840	2.388	1.509
	3.86	4.25	2.00	5.94	3.49	4.60	-1.712	1.137	0.895
17	145	30	6	7	10	20	-2.68	-4.00	1.85
	5.39	8.07	2.00	6.00	9.30	7.45	1.891	3.974	3.448
	7.97	9.70	2.37	10.20	7.90	10.63	-1.418	-1.007	0.537
18	145	30	6	7	10	20	-5.93	-2.57	3.35
	15.04	20.97	17.00	19.57	23.20	19.85	1.679	4.674	3.636
	7.49	8.54	4.69	11.28	10.14	7.67	-3.528	-0.550	0.921
19	145	30	6	7	10	20	3.87	-138.10	97.50
	4328.87	4325.00	4383.33	4521.43	4390.00	4292.50	68.315	213.193	124.575
	343.16	340.07	160.21	536.86	299.81	361.38	0.057	-0.648	0.783

REGION 3

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
1	698	71	35	30	17	54	11.83	-28.57	20.54
	359.31	347.48	331.76	360.33	363.10	342.56	9.162	17.377	14.774
	109.11	68.91	66.42	72.65	44.21	74.69	1.291	-1.644	1.390
2	698	71	35	30	17	54	-0.01	-0.03	0.02
	0.71	0.73	0.71	0.74	0.74	0.72	0.009	0.018	0.016
	0.08	0.07	0.09	0.04	0.05	0.08	-1.215	-1.951	1.069
3	698	71	35	30	17	54	0.01	0.04	-0.02
	0.07	0.06	0.07	0.03	0.04	0.06	0.009	0.016	0.013
	0.08	0.07	0.09	0.03	0.03	0.08	1.523	2.443	-1.448
4	698	71	35	30	17	54	0.04	-0.12	0.00
	0.67	0.63	0.57	0.49	0.63	0.63	0.028	0.053	0.058
	0.27	0.22	0.28	0.13	0.20	0.23	1.570	-2.324	0.024
5	643	66	30	30	16	50	-0.43	1.09	-1.77
	24.72	25.15	25.97	24.88	23.81	25.58	0.616	1.261	1.084
	5.02	4.74	5.71	3.89	3.25	5.07	-0.695	0.862	-1.634
6	453	57	25	26	15	42	-1.65	1.43	-0.21
	20.14	21.79	22.48	21.05	21.63	21.84	0.534	1.088	0.891
	4.44	3.71	4.22	3.51	2.43	4.10	-3.095	1.314	-0.235
7	698	71	35	30	17	54	31.51	-86.05	4.52
	321.91	290.41	246.87	332.92	293.85	289.32	18.370	35.840	36.928
	182.58	143.42	115.85	164.41	127.16	149.26	1.715	-2.401	0.123
8	698	71	35	30	17	54	-15.49	22.43	29.68
	119.92	135.40	148.02	125.59	157.98	128.30	9.217	18.099	23.999
	76.70	73.71	70.24	74.83	91.64	66.52	-1.680	1.239	1.237
9	698	71	35	30	17	54	0.04	-0.10	-0.03
	0.70	0.66	0.61	0.70	0.64	0.67	0.024	0.046	0.057
	0.19	0.19	0.20	0.17	0.21	0.19	1.749	-2.103	-0.493

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
10	263	32	13	16	8	24	25.06	-107.31	-256.04
	6515.84	6490.78	6655.00	6762.31	6298.75	6554.79	289.476	583.934	556.027
	1599.30	1539.57	1945.48	892.40	1254.51	1642.75	0.087	-0.184	-0.460
11	263	32	13	16	8	24	-2.34	-7.26	-4.14
	19.40	21.74	19.96	27.22	18.64	22.78	5.222	10.941	9.732
	27.38	27.95	31.50	26.35	21.31	30.17	-0.449	-0.664	-0.426
12	263	32	13	16	8	24	5.75	-1.20	0.63
	21.16	15.41	14.92	16.13	15.88	15.25	1.966	3.883	2.905
	13.33	10.10	10.00	10.87	4.91	11.41	2.925	-0.310	0.215
13	263	32	13	16	8	24	-0.69	-2.19	-1.37
	11.22	11.91	11.00	13.19	10.88	12.25	0.887	1.715	1.235
	2.48	4.94	1.35	6.70	1.25	5.65	-0.778	-1.275	-1.114
14	263	32	13	16	8	24	-1.88	-0.33	-1.04
	41.65	43.53	44.92	45.25	42.75	43.79	2.073	4.091	4.289
	12.20	10.92	13.03	7.66	10.21	11.35	-0.906	-0.080	-0.243
15	263	32	13	16	8	24	-0.58	-0.07	-2.71
	18.58	19.16	20.31	20.38	17.13	19.83	2.038	4.282	3.735
	11.64	10.79	13.80	7.68	8.17	11.60	-0.284	-0.016	-0.725
16	263	32	13	16	8	24	-2.56	0.90	-0.25
	36.37	38.94	39.46	38.56	38.75	39.00	0.599	1.141	1.373
	4.37	3.03	2.33	3.76	3.49	2.93	-4.283	0.788	-0.182
17	263	32	13	16	8	24	-0.87	-6.07	-0.71
	3.79	4.66	1.62	7.69	4.13	4.83	1.452	2.614	2.703
	6.70	7.87	1.56	10.31	5.84	8.54	-0.596	-2.323	-0.262
18	263	32	13	16	8	24	-3.43	1.94	2.17
	16.45	19.88	21.69	19.75	21.50	19.33	1.396	2.801	3.610
	9.55	7.16	8.73	5.63	9.53	6.34	-2.454	0.694	0.600
19	263	32	13	16	8	24	82.54	-27.79	175.08
	4445.98	4363.44	4347.77	4375.56	4494.75	4319.67	64.271	139.060	112.773
	341.15	343.54	396.25	340.81	239.13	365.61	1.284	-0.200	1.553

REGION 4

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
1	760	67	0	0	33	34	37.47	0.00	29.40
	363.04	325.56	0.00	0.00	340.48	311.08	8.874	0.000	13.659
	150.59	57.25	0.00	0.00	61.24	49.79	4.223	0.000	2.152
2	760	67	0	0	33	34	0.02	0.00	-0.04
	0.72	0.71	0.00	0.00	0.69	0.72	0.010	0.000	0.018
	0.10	0.08	0.00	0.00	0.09	0.06	1.618	0.000	-1.938
3	760	67	0	0	33	34	0.01	0.00	0.02
	0.06	0.05	0.00	0.00	0.06	0.04	0.009	0.000	0.018
	0.08	0.07	0.00	0.00	0.09	0.04	0.904	0.000	0.863
4	760	67	0	0	33	34	0.01	0.00	-0.02
	0.64	0.63	0.00	0.00	0.62	0.64	0.030	0.000	0.055
	0.36	0.22	0.00	0.00	0.27	0.17	0.373	0.000	-0.359
5	622	62	0	0	29	33	-4.58	0.00	-2.53
	20.00	24.58	0.00	0.00	23.24	25.76	0.721	0.000	1.267
	7.11	5.21	0.00	0.00	4.03	5.87	-6.352	0.000	-1.993
6	352	57	0	0	26	31	0.14	0.00	-1.40
	17.56	17.42	0.00	0.00	16.66	18.06	0.598	0.000	1.071
	4.48	4.14	0.00	0.00	3.55	4.53	0.234	0.000	-1.311
7	760	67	0	0	33	34	72.08	0.00	-8.24
	331.94	259.87	0.00	0.00	255.69	263.92	12.577	0.000	21.316
	189.08	85.30	0.00	0.00	98.56	73.75	5.731	0.000	-0.387
8	760	67	0	0	33	34	-45.56	0.00	72.52
	93.46	139.02	0.00	0.00	175.82	103.30	17.620	0.000	34.175
	87.43	141.87	0.00	0.00	187.16	60.16	-2.586	0.000	2.122
9	759	67	0	0	33	34	0.09	0.00	-0.08
	0.77	0.68	0.00	0.00	0.64	0.72	0.027	0.000	0.053
	0.20	0.22	0.00	0.00	0.27	0.15	3.234	0.000	-1.464

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2.3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
10	31	6	0	0	1	5	-480.81	0.00	-1341.80
	5250.35	5731.17	0.00	0.00	4613.00	5954.80	554.528	0.000	417.883
	2091.23	999.29	0.00	0.00	0.00	934.41	-0.867	0.000	-3.211
11	31	6	0	0	1	5	-1.84	0.00	-16.30
	13.52	15.37	0.00	0.00	1.79	18.08	8.684	0.000	9.159
	19.37	19.49	0.00	0.00	0.00	20.48	-0.212	0.000	-1.779
12	31	6	0	0	1	5	5.51	0.00	-12.40
	16.84	11.33	0.00	0.00	1.00	13.40	5.732	0.000	5.724
	14.46	12.52	0.00	0.00	0.00	12.80	0.960	0.000	-2.166
13	31	6	0	0	1	5	-0.89	0.00	-0.60
	10.61	11.50	0.00	0.00	11.00	11.60	0.468	0.000	0.400
	1.78	0.84	0.00	0.00	0.00	0.89	-1.895	0.000	-1.500
14	31	6	0	0	1	5	-0.87	0.00	-11.80
	41.97	42.83	0.00	0.00	33.00	44.80	3.514	0.000	1.744
	14.14	5.95	0.00	0.00	0.00	3.90	-0.246	0.000	-6.768
15	31	6	0	0	1	5	4.89	0.00	-3.00
	15.39	10.50	0.00	0.00	8.00	11.00	4.134	0.000	3.795
	14.98	7.69	0.00	0.00	0.00	8.49	1.182	0.000	-0.791
16	31	6	0	0	1	5	-3.08	0.00	-3.00
	35.42	38.50	0.00	0.00	36.00	39.00	1.833	0.000	1.897
	4.69	3.99	0.00	0.00	0.00	4.24	-1.681	0.000	-1.581
17	31	6	0	0	1	5	2.40	0.00	-2.00
	5.06	2.67	0.00	0.00	1.00	3.00	1.545	0.000	1.140
	6.61	2.42	0.00	0.00	0.00	2.55	1.552	0.000	-1.754
18	31	6	0	0	1	5	1.65	0.00	16.80
	22.65	21.00	0.00	0.00	35.00	18.20	6.039	0.000	6.296
	8.26	14.34	0.00	0.00	0.00	14.08	0.272	0.000	2.668
19	31	6	0	0	1	5	-337.37	0.00	380.00
	3945.97	4283.33	0.00	0.00	4600.00	4220.00	165.887	0.000	168.523
	376.56	371.03	0.00	0.00	0.00	376.83	-2.034	0.000	2.255

REGION 5

Table C-1 (Continued)

	Means						Tests of Differences		
	NUT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
1	758	204	197	7	76	128	2.62	-81.54	10.20
	220.91	218.29	215.49	297.03	224.69	214.49	4.017	22.052	7.504
	58.16	48.80	46.21	57.69	56.09	43.69	0.652	-3.698	1.359
2	758	204	197	7	76	128	-0.02	0.00	0.00
	0.75	0.77	0.77	0.77	0.77	0.77	0.005	0.009	0.009
	0.07	0.07	0.0[illegible]	0.02	0.06	0.07	-4.120	0.091	-0.061
3	758	204	197	7	76	128	0.02	0.04	0.01
	0.08	0.06	0.07	0.03	0.07	0.06	0.004	0.013	0.008
	0.06	0.06	0.06	0.03	0.05	0.06	3.901	3.008	0.911
4	758	204	197	7	76	128	0.00	-0.01	0.00
	0.68	0.68	0.68	0.69	0.68	0.68	0.008	0.021	0.014
	0.13	0.10	0.10	0.05	0.09	0.10	-0.528	-0.462	-0.219
5	749	204	197	7	76	128	-0.60	2.28	-0.21
	28.19	28.80	28.87	26.59	28.66	28.87	0.448	1.002	0.728
	3.92	6.06	6.14	2.38	2.86	7.34	-1.350	2.278	-0.288
6	733	199	192	7	75	124	-0.78	1.28	0.27
	21.42	22.21	22.25	20.97	22.37	22.10	0.318	1.003	0.535
	4.15	3.93	3.97	2.54	3.19	4.33	-2.465	1.277	0.508
7	758	204	197	7	76	128	1.55	-134.88	-14.01
	92.22	90.66	86.04	220.91	81.87	95.88	5.190	20.910	8.874
	65.21	65.46	61.56	54.09	54.08	71.79	0.300	-6.450	-1.579
8	758	204	197	7	76	128	-4.55	38.55	32.72
	167.99	172.54	173.86	135.32	193.07	160.35	5.035	12.055	9.[illegible]70
	66.91	62.98	63.48	29.56	78.90	47.55	-0.904	3.198	3.279
9	758	204	197	7	76	128	0.01	-0.30	-0.05
	0.34	0.33	0.32	0.62	0.30	0.35	0.015	0.030	0.027
	0.19	0.19	0.19	0.07	0.18	0.20	0.875	-9.825	-1.817

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
10	225 3402.14 1314.76	79 3887.13 1116.46	79 3887.13 1116.46	0 0.00 0.00	29 3993.45 1006.34	50 3825.46 1181.06	-484.98 153.169 -3.166	3887.13 125.611 30.946	167.99 250.639 0.670
11	225 6.10 13.86	79 5.02 9.54	79 5.02 9.54	0 0.00 0.00	29 5.31 11.12	50 4.85 8.61	1.08 1.417 0.762	5.02 1.074 4.672	0.46 2.398 0.193
12	225 2.11 5.34	79 2.80 4.60	79 2.80 4.60	0 0.00 0.00	29 3.38 4.85	50 2.46 4.47	-0.69 0.628 -1.092	2.80 0.518 5.402	0.92 1.100 0.835
13	225 8.59 1.53	79 9.35 1.62	79 9.35 1.62	0 0.00 0.00	29 9.41 1.21	50 9.32 1.82	-0.76 0.209 -3.661	9.35 0.182 51.402	0.09 0.342 0.274
14	225 27.48 9.18	79 32.08 8.89	79 32.08 8.89	0 0.00 0.00	29 33.10 8.23	50 31.48 9.27	-4.59 1.172 -3.917	32.08 1.000 32.082	1.62 2.014 0.806
15	225 5.88 5.59	79 6.86 4.36	79 6.86 4.36	0 0.00 0.00	29 7.17 3.26	50 6.68 4.91	-0.98 0.617 -1.591	6.86 0.491 13.973	0.49 0.922 0.534
16	225 39.86 4.60	79 40.06 3.41	79 40.06 3.41	0 0.00 0.00	29 40.45 3.96	50 39.84 3.06	-0.21 0.491 -0.419	40.06 0.383 104.558	0.61 0.853 0.713
17	225 30.73 19.55	79 24.61 15.79	79 24.61 15.79	0 0.00 0.00	29 26.66 14.93	50 23.42 16.31	6.13 2.204 2.780	24.61 1.777 13.848	3.24 3.606 0.897
18	225 13.27 5.89	79 19.39 9.55	79 19.39 9.55	0 0.00 0.00	29 22.66 10.99	50 17.50 8.14	-6.12 1.144 -5.350	19.39 1.075 18.045	5.16 2.343 2.200
19	225 3202.20 452.59	79 3227.38 465.71	79 3227.38 465.71	0 0.00 0.00	29 3277.17 360.98	50 3198.50 518.14	-25.18 60.463 -0.416	3227.38 52.397 61.595	78.67 99.311 0.792

REGION 6

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
1	296	123	7	28	61	62	78.69	9.74	4.41
	401.47	322.78	314.7	304.96	325.00	320.60	15.554	24.920	16.624
	226.55	91.81	56.60	67.64	93.50	90.83	5.059	0.391	0.265
2	296	123	7	28	61	62	-0.02	0.00	0.01
	0.74	0.76	0.73	0.74	0.76	0.75	0.010	0.046	0.015
	0.11	0.08	0.12	0.08	0.09	0.08	-1.590	-0.059	0.503
3	296	123	7	28	61	62	0.03	-0.01	-0.01
	0.07	0.05	0.06	0.07	0.04	0.05	0.007	0.028	0.010
	0.08	0.06	0.07	0.07	0.06	0.06	3.724	-0.331	-1.167
4	296	123	7	28	61	62	0.10	0.12	0.03
	0.75	0.65	0.65	0.52	0.67	0.63	0.024	0.107	0.040
	0.23	0.22	0.26	0.21	0.23	0.21	4.231	1.158	0.814
5	285	116	7	25	57	59	-3.80	-1.78	0.60
	21.74	25.54	24.51	26.29	25.84	25.24	0.544	1.310	0.857
	5.71	4.59	2.42	4.69	5.14	4.00	-6.985	-1.356	0.700
6	193	105	5	24	50	55	-3.21	1.39	0.02
	16.69	19.90	23.01	21.62	19.91	19.89	0.595	2.737	0.978
	4.87	4.93	5.78	4.43	5.48	4.42	-5.388	0.508	0.019
7	296	123	7	28	61	62	88.85	-70.86	-33.97
	254.43	165.58	103.35	174.20	148.46	182.42	21.645	28.160	23.983
	309.29	133.69	47.54	114.73	122.69	142.69	4.105	-2.516	-1.416
8	296	123	7	28	61	62	-13.08	62.95	35.69
	196.06	209.14	237.74	174.79	227.23	191.34	12.465	28.269	18.113
	145.74	101.42	66.62	68.01	113.09	85.69	-1.049	2.227	1.982
9	286	120	7	27	59	61	0.09	-0.17	-0.08
	0.51	0.42	0.30	0.48	0.38	0.46	0.026	0.059	0.039
	0.28	0.22	0.13	0.16	0.21	0.21	3.621	-2.960	-2.012

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
10	36	24	0	0	11	13	1196.18	0.00	-126.15
	6065.06	4868.88	0.00	0.00	4800.55	4926.69	1516.083	0.000	347.005
	9036.77	849.75	0.00	0.00	737.02	960.93	0.789	0.000	-0.364
11	36	24	0	0	11	13	-7.55	0.00	7.85
	3.88	11.43	0.00	0.00	15.68	7.83	3.621	0.000	7.317
	6.49	16.93	0.00	0.00	22.55	9.74	-2.084	0.000	1.073
12	36	24	0	0	11	13	-4.35	0.00	-0.13
	4.36	8.71	0.00	0.00	8.64	8.77	1.360	0.000	2.007
	5.60	4.85	0.00	0.00	4.57	5.26	-3.196	0.000	-0.066
13	36	24	0	0	11	13	-0.87	0.00	-1.50
	10.67	11.54	0.00	0.00	10.73	12.23	1.380	0.000	2.143
	4.63	5.60	0.00	0.00	1.35	7.58	-0.634	0.000	-0.702
14	36	24	0	0	11	13	-8.18	0.00	1.69
	35.36	43.54	0.00	0.00	44.45	42.77	1.916	0.000	2.351
	9.02	5.82	0.00	0.00	4.93	6.57	-4.270	0.000	0.717
15	36	24	0	0	11	13	-0.79	0.00	-0.43
	10.17	10.96	0.00	0.00	10.73	11.15	1.107	0.000	1.645
	4.60	3.92	0.00	0.00	4.10	3.91	-0.715	0.000	-0.259
16	36	24	0	0	11	13	-0.06	0.00	1.13
	38.69	38.75	0.00	0.00	39.36	38.23	1.108	0.000	1.633
	4.62	3.90	0.00	0.00	4.18	3.75	-0.050	0.000	0.694
17	36	24	0	0	11	13	8.50	0.00	-0.21
	15.25	6.75	0.00	0.00	6.64	6.85	2.318	0.000	2.412
	12.02	5.72	0.00	0.00	6.09	5.64	3.666	0.000	-0.087
18	36	24	0	0	11	13	-3.17	0.00	8.31
	21.33	24.50	0.00	0.00	29.00	20.69	2.661	0.000	3.738
	10.61	9.74	0.00	0.00	9.87	8.16	-1.190	0.000	2.222
19	36	24	0	0	11	13	181.71	0.00	-282.27
	3938.33	3756.63	0.00	0.00	3603.73	3886.00	127.893	0.000	161.086
	568.88	420.49	0.00	0.00	330.27	456.53	1.421	0.000	-1.752

REGION 7

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
1	425 526.96 356.74	47 351.17 95.16	10 338.29 86.78	28 350.15 86.31	31 372.41 103.47	16 310.03 60.17	175.79 22.184 7.924	-11.86 31.924 -0.372	62.39 23.909 2.609
2	425 0.69 0.10	47 0.71 0.06	10 0.72 0.09	28 0.70 0.05	31 0.70 0.06	16 0.73 0.04	-0.02 0.010 -2.127	0.01 0.029 0.517	-0.04 0.014 -2.747
3	425 0.09 0.08	47 0.06 0.04	10 0.05 0.04	28 0.07 0.04	31 0.07 0.04	16 0.05 0.04	0.02 0.007 3.271	-0.02 0.016 -1.432	0.02 0.012 1.756
4	425 0.70 0.31	47 0.62 0.18	10 0.58 0.34	28 0.65 0.11	31 0.63 0.22	16 0.60 0.07	0.08 0.030 2.476	-0.07 0.111 -0.639	0.03 0.042 0.760
5	377 18.85 8.15	45 25.21 4.08	8 27.88 3.07	28 24.25 3.56	29 24.95 4.27	16 25.69 3.81	-6.36 0.740 -8.605	3.63 1.276 2.842	-0.74 1.239 -0.597
6	231 17.48 6.21	43 20.44 4.82	7 20.34 5.51	27 19.68 4.57	27 19.44 5.28	16 22.12 3.44	-2.97 0.840 -3.529	0.66 2.261 0.293	-2.68 1.331 -2.013
7	425 429.33 359.65	47 247.30 98.06	10 236.77 79.15	28 270.94 97.38	31 243.04 103.42	16 255.57 89.36	182.02 22.560 8.069	-34.17 31.067 -1.100	-12.53 29.053 -0.431
8	425 205.41 268.28	47 197.77 188.56	10 140.89 67.41	28 167.31 62.04	31 234.00 222.91	16 127.57 41.09	7.65 30.427 0.251	-26.42 24.328 -1.086	106.42 41.332 2.575
9	425 0.67 0.20	47 0.58 0.18	10 0.63 0.18	28 0.61 0.13	31 0.53 0.19	16 0.66 0.13	0.10 0.028 3.435	0.02 0.061 0.277	-0.12 0.048 -2.620

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
10	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
11	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
12	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
13	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
14	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
15	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
16	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
17	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
18	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
19	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000

REGION 8

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
1	257	136	0	0	47	89	70.57	0.00	25.51
	480.12	409.54	0.00	0.00	426.24	400.73	13.706	0.000	16.053
	185.05	86.18	0.00	0.00	92.65	81.73	5.149	0.000	1.589
2	257	136	0	0	47	89	-0.03	0.00	-0.02
	0.69	0.72	0.00	0.00	0.71	0.73	0.007	0.000	0.011
	0.08	0.05	0.00	0.00	0.06	0.05	-4.708	0.000	-2.190
3	257	136	0	0	47	89	0.03	0.00	0.02
	0.07	0.04	0.00	0.00	0.06	0.04	0.005	0.000	0.008
	0.07	0.04	0.00	0.00	0.05	0.03	5.080	0.000	2.822
4	257	136	0	0	47	89	0.07	0.00	-0.06
	0.73	0.66	0.00	0.00	0.62	0.68	0.032	0.000	0.049
	0.33	0.28	0.00	0.00	0.26	0.29	2.283	0.000	-1.208
5	223	122	0	0	42	80	-4.44	0.00	-2.45
	21.73	26.17	0.00	0.00	24.57	27.01	0.541	0.000	0.788
	6.15	3.88	0.00	0.00	4.56	3.19	-8.208	0.000	-3.106
6	105	89	0	0	36	53	-1.79	0.00	-3.35
	19.06	20.85	0.00	0.00	18.85	22.21	0.822	0.000	1.206
	5.84	5.59	0.00	0.00	6.01	4.90	-2.174	0.000	-2.780
7	257	136	0	0	47	89	90.67	0.00	-31.23
	330.91	240.24	0.00	0.00	219.80	251.03	18.505	0.000	27.425
	215.16	148.56	0.00	0.00	156.14	144.13	4.900	0.000	-1.139
8	257	136	0	0	47	89	-45.80	0.00	42.92
	222.72	268.53	0.00	0.00	296.61	253.69	11.365	0.000	16.825
	125.53	96.07	0.00	0.00	92.30	95.19	-4.030	0.000	2.551
9	257	136	0	0	47	89	0.12	0.00	-0.08
	0.57	0.45	0.00	0.00	0.40	0.48	0.022	0.000	0.035
	0.21	0.20	0.00	0.00	0.19	0.20	5.340	0.000	-2.187

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
10	18 6639.61 1345.51	26 6630.81 792.99	0 0.00 0.00	0 0.00 0.00	5 6290.40 693.85	21 6711.86 808.63	8.80 353.219 0.025	0.00 0.000 0.000	-421.46 356.962 -1.181
11	18 24.31 25.54	26 34.30 37.11	0 0.00 0.00	0 0.00 0.00	5 14.32 13.35	21 39.05 39.53	-9.98 9.446 -1.057	0.00 0.000 0.000	-24.73 10.491 -2.357
12	18 9.22 5.76	26 8.04 4.78	0 0.00 0.00	0 0.00 0.00	5 6.80 2.49	21 8.33 5.18	1.18 1.649 0.718	0.00 0.000 0.000	-1.53 1.587 -0.966
13	18 11.33 1.41	26 11.81 0.63	0 0.00 0.00	0 0.00 0.00	5 11.80 0.45	21 11.81 0.68	-0.47 0.356 -1.333	0.00 0.000 0.000	-0.01 0.249 -0.038
14	18 44.06 11.73	26 45.35 7.80	0 0.00 0.00	0 0.00 0.00	5 46.60 8.08	21 45.05 7.90	-1.29 3.159 -0.408	0.00 0.000 0.000	1.55 4.004 0.388
15	18 20.50 9.55	26 19.46 6.13	0 0.00 0.00	0 0.00 0.00	5 16.20 4.32	21 20.24 6.32	1.04 2.552 0.407	0.00 0.000 0.000	-4.04 2.376 -1.700
16	18 37.56 5.07	26 38.00 6.27	0 0.00 0.00	0 0.00 0.00	5 40.80 4.82	21 37.33 6.49	-0.44 1.715 -0.259	0.00 0.000 0.000	3.47 2.578 1.345
17	18 2.94 2.58	26 7.50 9.49	0 0.00 0.00	0 0.00 0.00	5 8.60 8.32	21 7.24 9.91	-4.56 1.957 -2.327	0.00 0.000 0.000	1.36 4.306 0.316
18	18 24.44 9.06	26 30.15 10.78	0 0.00 0.00	0 0.00 0.00	5 36.80 9.18	21 28.57 10.71	-5.71 3.005 -1.900	0.00 0.000 0.000	8.23 4.722 1.743
19	18 4722.56 252.71	26 4819.88 259.12	0 0.00 0.00	0 0.00 0.00	5 4850.00 308.22	21 4812.71 254.26	-97.33 78.296 -1.243	0.00 0.000 0.000	37.29 148.588 0.251

Table C-1 (Continued)

REGION 9

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
1	10	20	19	1	12	8	52.14	28.21	-39.74
	576.83	524.69	526.10	497.89	508.79	548.53	43.221	24.875	46.455
	114.42	105.73	108.43	0.00	115.13	91.80	1.206	1.134	-0.856
2	10	20	19	1	12	8	0.04	-0.01	0.00
	0.74	0.70	0.70	0.71	0.70	0.69	0.024	0.013	0.026
	0.06	0.06	0.06	0.00	0.06	0.06	1.816	-0.807	0.134
3	10	20	19	1	12	8	-0.04	-0.03	-0.01
	0.00	0.05	0.05	0.07	0.04	0.05	0.012	0.012	0.023
	0.02	0.05	0.05	0.00	0.05	0.05	-3.428	-2.103	-0.523
4	10	20	19	1	12	8	0.07	-0.09	0.00
	0.87	0.80	0.79	0.88	0.80	0.80	0.054	0.033	0.065
	0.14	0.14	0.14	0.00	0.15	0.14	1.379	-2.772	-0.054
5	10	20	19	1	12	8	-4.74	-0.07	1.17
	16.72	21.46	21.46	21.53	21.93	20.76	1.757	1.236	2.461
	4.14	5.24	5.39	0.00	5.28	5.47	-2.700	-0.059	0.476
6	5	15	14	1	9	6	-3.95	4.59	-0.25
	10.06	14.01	14.32	9.73	13.91	14.17	1.790	1.510	3.035
	2.38	5.57	5.65	0.00	5.82	5.72	-2.209	3.041	-0.083
7	10	20	19	1	12	8	-66.29	171.86	-93.49
	96.98	163.27	171.86	0.00	125.87	219.36	33.637	29.600	63.115
	51.87	131.33	129.02	0.00	99.48	158.96	-1.971	5.806	-1.481
8	10	20	19	1	12	8	20.76	-133.45	7.64
	482.70	461.94	455.27	588.72	465.00	457.36	41.067	32.461	70.818
	83.28	140.92	141.49	0.00	123.22	173.20	0.505	-4.111	0.108
9	10	20	19	1	12	8	-0.09	0.26	-0.10
	0.16	0.25	0.26	0.00	0.21	0.31	0.048	0.039	0.085
	0.08	0.18	0.17	0.00	0.15	0.21	-1.789	6.683	-1.201

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
10	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
11	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
12	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
13	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
14	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
15	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
16	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
17	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
18	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000
19	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0.00 0.000 0.000	0.00 0.000 0.000	0.00 0.000 0.000

ALL STATES

Table C-1 (Continued)

	Means						Tests of Differences		
	NOT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
1	4144	875	290	234	315	560	37.70	-89.43	6.72
	370.95	333.25	270.49	359.92	337.55	330.83	4.753	8.941	7.720
	195.27	108.24	112.07	92.58	111.33	106.48	7.932	-10.003	0.871
2	4144	875	290	234	315	560	-0.02	0.01	-0.01
	0.71	0.74	0.75	0.73	0.73	0.74	0.003	0.007	0.005
	0.09	0.07	0.08	0.07	0.08	0.07	-7.968	1.602	-1.325
3	4144	875	290	234	315	560	0.02	0.01	0.00
	0.07	0.06	0.07	0.06	0.06	0.06	0.002	0.006	0.004
	0.08	0.06	0.06	0.07	0.06	0.06	7.587	1.256	0.635
4	4144	875	290	234	315	560	0.02	0.01	-0.01
	0.68	0.66	0.67	0.66	0.66	0.67	0.008	0.015	0.014
	0.27	0.20	0.17	0.18	0.20	0.20	2.154	0.800	-0.822
5	3796	841	283	230	299	542	-2.57	2.98	-0.64
	23.43	26.01	27.72	24.75	25.59	26.23	0.204	0.444	0.346
	6.49	5.06	6.18	3.78	4.48	5.34	-12.623	6.699	-1.850
6	2691	727	260	199	270	457	-1.15	1.62	-0.68
	19.24	20.40	21.55	19.93	19.97	20.65	0.197	0.373	0.353
	5.50	4.48	4.55	3.44	4.78	4.28	-5.856	4.345	-1.933
7	4144	875	290	234	315	560	76.66	-174.08	-48.02
	291.17	214.51	126.62	300.71	183.78	231.80	6.104	10.917	9.802
	233.97	145.08	100.02	140.77	133.68	148.46	12.558	-15.946	-4.899
8	4144	875	290	234	315	560	-34.19	69.55	56.26
	155.64	189.83	199.53	129.99	225.84	169.57	4.803	8.593	9.104
	160.22	121.49	111.03	85.64	141.87	103.11	-7.119	8.093	6.180
9	4133	872	290	233	313	559	0.11	-0.32	-0.11
	0.62	0.51	0.37	0.69	0.44	0.55	0.009	0.017	0.017
	0.26	0.25	0.22	0.18	0.24	0.24	11.586	-18.679	-6.505

Table C-1 (Concluded)

	Means						Tests of Differences		
	NUT SAFA	TOTAL SAFA	OPTIONS 2,3&5	OPTION 6	OUTS <50%	OUTS >50%	TEST SAFA	TEST OPTION	TEST OUT
10	795	244	98	70	71	173	124.45	-2243.74	-471.27
	5583.91	5459.46	4361.66	6605.40	5125.32	5596.59	143.421	197.472	215.091
	2793.13	1620.05	1575.33	978.29	1465.79	1663.89	0.868	-11.362	-2.191
11	795	244	98	70	71	173	0.84	-15.32	-4.77
	16.27	15.42	6.77	22.09	12.04	16.81	1.983	3.686	3.396
	31.74	25.50	14.96	28.13	23.10	26.36	0.425	-4.157	-1.404
12	795	244	98	70	71	173	3.29	-11.94	-2.38
	13.45	10.16	4.97	14.91	8.46	10.85	0.790	1.492	1.220
	13.29	9.90	7.17	10.92	7.72	10.61	4.168	-8.005	-1.955
13	795	244	98	70	71	173	-0.39	-2.19	-0.61
	10.35	10.75	9.61	11.80	10.31	10.92	0.205	0.437	0.306
	2.37	2.92	1.64	3.38	1.44	3.33	-1.907	-5.007	-2.012
14	795	244	98	70	71	173	-2.03	-10.38	-0.86
	37.87	39.89	34.03	44.41	39.28	40.14	0.817	1.500	1.395
	13.11	10.49	10.22	9.10	9.46	10.90	-2.480	-6.925	-0.618
15	795	244	98	70	71	173	1.12	-10.36	-2.46
	14.98	13.86	8.97	19.33	12.11	14.57	0.723	1.303	1.140
	12.22	9.04	7.82	8.67	7.40	9.56	1.552	-7.948	-2.158
16	795	244	98	70	71	173	-1.17	3.76	1.32
	36.99	38.16	39.86	36.10	39.10	37.78	0.321	0.579	0.585
	4.70	4.28	3.24	4.00	4.08	4.32	-3.653	6.490	2.253
17	795	244	98	70	71	173	0.65	16.72	4.40
	12.07	11.41	20.17	3.46	14.54	10.13	1.087	1.865	2.037
	16.94	14.15	16.85	6.38	14.73	13.74	0.599	8.965	2.161
18	795	244	98	70	71	173	-5.46	1.19	4.91
	15.55	21.01	19.55	18.36	24.49	19.58	0.691	1.303	1.444
	8.52	9.70	9.22	7.63	10.76	8.88	-7.907	0.916	3.399
19	795	244	98	70	71	173	79.73	-792.64	-137.81
	4016.69	3936.96	3446.78	4239.41	3839.25	3977.06	48.377	74.212	92.138
	655.44	662.71	630.40	318.83	648.57	666.13	1.648	-10.681	-1.496

Appendix D

SCHOOL FINANCES, BY SELECTED SCHOOL DISTRICTS

APPENDIX D

SCHOOL FINANCES, BY SELECTED SCHOOL
(F_c Calculated for 54 Distric
FY 1960

State and District	1 Residential as a % of Total Developed Property	2 Total ADA	3 3(a) ADA	4 3(b) ADA	5 3(b) Residential Percentage	6 Local Revenues, Current	7 % Local Revenue from Property Tax	8 Total Developed Property as % of Total Property Value	9 Local Property Tax (developed property)
Alabama									
17 Mobile Co.	47.9%	60,984	100	11,560	9.10%	$ 4,069,347	68%	89.9%	$ 2,487,673
2 Montgomery Co.	51.2	32,300	730	4,720	7.68	1,470,203	68	93.7	936,755
California									
155 Long Beach Unified	62.1	72,376	1,613	8,880	7.76	21,802,713	99	96.5	19,787,761†
430 Oakland Unified	45.6	60,989	153	6,588	4.92	18,192,058	99	98.3	16,818,767†
105 San Diego Unified	63.0	99,624	3,805	21,074	13.9	20,439,034	99	95.4	18,338,658†
128 San Francisco Unified	41.7	91,961	1,303	6,389	2.94	27,309,454	99	98.6	25,324,958†
Florida									
202 Hillsborough Co.	68.9	70,465	154	2,547	2.49	7,047,664	100	88.1	6,208,992
901 Pinellas Co.	87.7	49,648	8	1,680	2.96	7,987,102	100	93.9	7,499,899
402 Seminole Co.	83.2	10,167	4	1,429	11.7	571,517	100	77.7	444,069
Georgia									
11 Bibb Co.	51.3	29,060	13	5,158	9.13	2,191,408	100	92.9	2,035,818
17 DeKalb Co. (excl. Atlanta)	80.8	37,605	0	1,868	4.02	4,149,014	100	93.6	3,883,477
821 Fulton Co. (excl. Atlanta)	45.3	23,191	0	1,481	2.89	4,495,848	100	91.9	4,131,684
23 Muscogee Co.	53.9	31,158	0	8,002	13.9	2,602,372	100	94.0	2,446,230
Louisiana									
202 Calcasieu Parish	26.6	24,875	243	1,770	1.91	2,504,594	77	95.1	1,834,039
205 Rapides Parish	40.3	20,148	357	1,462	2.98	1,628,250	77	86.5	1,084,495
Maryland									
1101 Allegheny Co.	47.1	14,905	0	610	1.93	1,956,567	78	96.2	1,468,129
2 Anne Arundel Co.	72.1	36,513	1,750	6,382	13.3	4,198,147	78	90.2	2,953,649
402 Baltimore Co.	61.6	76,027	49	3,805	3.09	22,831,626	78	94.8	16,882,617
5 Frederick Co.	43.9	12,922	96	1,743	5.97	2,582,301	78	75.0	1,510,646
4 Montgomery Co.	73.3	70,235	66	25,058	26.2	19,975,397	78	95.0	14,801,769
6 Prince Georges Co.	73.1	60,363	351	20,945	25.5	11,217,551	78	92.2	8,069,214
701 Washington Co.	52.1	17,130	56	2,086	6.36	3,570,808	78	90.1	2,509,492
Massachusetts									
903 Brockton City	69.5	11,513	0	684	4.13	3,530,880	100	97.9	3,464,485
14 Holyoke City Sch. Comm.	53.7	5,755	0	236	2.20	1,675,851	100	98.3	1,647,362
1118 Lowell School Comm.	61.8	10,021	0	439	2.71	3,159,599	100	98.8	3,121,684
1007 Lynn Sch. Comm.	66.2	12,854	0	610	3.14	4,527,919	100	95.8	4,337,746
911 Malden School Comm.	65.9	8,550	0	512	3.95	2,348,184	100	99.2	2,329,399
918 Medford School Comm.	83.0	9,218	0	553	4.98	2,854,661	100	99.3	2,834,678
1020 Newton City	83.7	15,787	0	491	2.60	6,857,157	100	99.0	6,788,585
812 Pittsfield School Comm.	66.5	10,174	0	1,643	10.7	2,659,524	100	98.4	2,616,972
602 Quincy City Sch. Comm.	66.8	13,876	129	1,407	6.81	5,172,515	100	98.9	5,115,617
7 Springfield City Sch. Comm.	65.5	26,362	14	1,656	4.12	8,969,838	100	97.0	8,700,743
902 Waltham School Comm.	62.9	7,812	0	285	2.30	2,872,469	100	97.6	2,803,530

* The data for this table was derived from published and survey information. It has not been verified against local sources of information.

† Local property tax (developed property), Col. 9, for California (only) reduced by 5% to eliminate expenditures for adults.

‡ Parentheses indicate negative number.

APPENDIX D

ANCES, BY SELECTED SCHOOL DISTRICTS*
Calculated for 54 Districts)
FY 1960

7	8	9	10	11	12	13	14	15	16	17	18	19
ocal enue Prop- Tax	Total Developed Property as % of Total Property Value	Local Property Tax (developed property)	L_f	L_n	F_e	F Entitle-ment	$.95\ F-F_e$	$\frac{.95\ F-F_e}{F}$	$\frac{L_f/(3b)}{L_n/N_n}$	3(b) Payment Ratio	Local Contri-bution Rate	LCR-L_n/N_n
8%	89.9%	$ 2,487,673	$ 266,378	$ 2,261,295	$ 307,288	$ 958,227	$ 603,028	62.9%	.435	.565	$163	$117
8	93.7	936,755	71,943	864,812	103,614	504,380	375,547	74.5	.469	.531	163	131
9	96.5	19,787,761*	1,535,530	18,252,231	1,567,349	1,248,408	(381,361)±	(30.5)	.588	.412	217	-77
9	98.3	16,818,767*	827,483	15,991,284	1,155,436	746,682	(446,088)	(59.7)	.427	.573	217	-78
9	95.4	18,338,658*	2,549,075	15,789,585	2,708,859	3,080,869	217,967	7.1	.573	.427	217	6
9	98.6	25,324,958*	744,554	24,580,404	1,492,263	946,174	(593,398)	(62.7)	.401	.599	217	-75
0	88.1	6,208,992	154,604	6,054,388	87,572	233,010	133,788	57.4	.685	.315	163	74
0	93.9	7,499,899	221,997	7,277,902	32,730	138,419	98,768	7.1	.868	.132	163	11
0	77.7	444,069	51,956	392,113	12,711	117,280	98,705	84.2	.800	.200	163	118
0	92.9	2,035,818	185,870	1,849,948	213,719	423,092	188,218	44.5	.468	.532	163	86
0	93.6	3,883,477	156,116	3,727,361	37,707	152,456	107,126	70.3	.808	.192	163	59
0	91.9	4,131,684	119,406	4,012,278	153,429	120,871	(38,602)	(31.9)	.438	.562	163	-22
0	94.0	2,446,230	340,026	2,106,204	388,721	648,470	227,325	35.1	.462	.538	163	72
7	95.1	1,834,039	35,030	1,799,009	123,283	184,123	51,634	28.0	.253	.747	163	84
7	86.5	1,084,495	32,318	1,052,177	71,848	175,309	94,696	54.0	.386	.614	163	106
8	96.2	1,468,129	28,335	1,439,794	33,576	55,022	18,695	34.0	.455	.545	180	79
8	90.2	2,953,649	392,835	2,560,814	342,119	881,096	494,922	56.2	.689	.311	180	90
8	94.8	16,882,617	521,673	16,360,944	345,457	307,113	(53,700)	(17.5)	.604	.396	180	-47
8	75.0	1,510,646	90,186	1,420,460	145,610	174,537	20,200	11.6	.406	.594	180	52
8	95.0	14,801,769	3,878,063	10,923,706	2,206,441	2,271,819	(48,213)	(2.12)	.640	.360	180	-62
8	92.2	8,069,214	2,057,140	6,010,074	1,218,350	1,952,559	636,581	32.6	.636	.364	180	26
8	90.1	2,509,492	159,604	2,349,888	176,430	198,259	11,916	6.0	.490	.510	180	23
0	97.9	3,464,485	143,083	3,321,402	66,165	81,467	11,229	13.8	.681	.319	238	-69
0	98.3	1,647,362	36,242	1,611,120	33,036	35,407	601	1.7	.527	.473	300	8
0	98.8	3,121,684	84,598	3,037,086	55,108	62,950	4,694	7.5	.609	.391	287	-30
0	95.8	4,337,746	136,205	4,201,541	73,872	51,278	(25,158)	(49.1)	.650	.350	315	-38
0	99.2	2,329,399	92,011	2,237,388	51,182	75,051	20,116	26.8	.647	.353	293	16
0	99.3	2,834,678	141,167	2,693,511	31,218	81,232	45,952	56.7	.820	.180	294	-17
0	99.0	6,788,585	176,503	6,612,082	35,084	96,373	56,470	58.6	.831	.169	392	-40
0	98.4	2,616,972	280,016	2,336,956	171,017	236,041	53,222	22.5	.620	.380	287	13
0	98.9	5,115,617	348,374	4,767,243	242,764	260,590	4,796	1.8	.642	.358	324	-62
0	97.0	8,700,743	358,471	8,342,272	208,803	278,348	55,628	20.0	.639	.361	330	-8
0	97.6	2,803,530	64,481	2,739,049	59,603	40,992	(661)	(1.6)	.621	.379	288	-76

local sources of information.
for adults.

APPENDIX D (concluded)

	1	2	3	4	5	6	7	8	9	10
State and District	Residential as a % of Total Developed Property	Total ADA	3(a) ADA	3(b) ADA	3(b) Residential Percentage	Local Revenues, Current	% Local Revenue from Property Tax	Total * Developed Property as % of Total Property Value	Local Property Tax (developed property)	L_1
Nebraska										
207 Omaha	61.5%	43,168	72	2,231	3.19%	$11,040,418	91%	98.4%	$ 9,886,032	$ 315,3
New Hampshire										
1103 Manchester Sch. Dept.	58.9	8,969	33	253	1.67	2,734,736	94	98.6	2,534,663	42,3
North Carolina										
4 New Hanover Co.	52.8	15,500	0	592	2.02	929,008	80	91.1	684,349	13,8
Ohio										
203 Columbus	48.7	73,404	53	6,243	4.14	18,119,033	91	98.7	16,273,972	673,7
Oklahoma										
43 Oklahoma City	57.2	58,965	0	6,966	6.75	9,703,628	64	95.8	5,949,488	401,5
Pennsylvania										
1012 Philadelphia	61.6	216,117	94	13,881	3.96	57,056,332	79	98.8	44,533,608	1,763,5
Rhode Island										
9 Warwick School Comm.	83.1	12,796	0	1,018	6.61	3,770,283	75	94.7	2,677,843	177,0
Texas										
18 Fort Worth ISD	57.3	61,545	297	8,819	8.25	10,325,123	100	98.4	10,159,921	838,1
126 San Antonio ISD	70.7	62,780	256	12,884	14.6	6,425,962	100	96.3	6,188,201	903,47
Virginia										
16 Alexandria City	64.1	12,631	0	5,192	26.3	3,500,371	100	93.8	3,283,348	863,52
7 Arlington Co.	70.0	22,030	178	11,818	37.9	7,357,389	100	96.0	7,063,093	2,676,91
8 Fairfax Co.	76.1	50,751	262	25,288	38.1	9,512,606	100	87.8	8,352,068	3,182,13
5 Hampton City	75.9	15,483	390	5,641	28.4	1,756,979	100	94.5	1,660,345	471,53
15 Norfolk City	58.3	45,890	1,117	16,994	22.2	7,160,622	100	97.8	7,003,088	1,554,68
9 Norfolk Co.	52.3	20,639	326	8,563	22.1	1,810,549	100	83.7	1,515,430	334,91
4 Portsmouth City	66.6	13,319	22	4,973	24.9	1,837,928	100	98.3	1,806,683	449,86
20 Prince William Co.	37.2	7,777	44	2,596	12.5	1,290,047	100	82.4	1,062,999	132,87
1 Princess Anne Co.	77.6	15,075	669	6,442	34.7	1,109,846	100	90.4	1,003,301	348,14
701 Roanoke Co.	67.3	12,164	12	443	2.46	1,627,316	100	90.5	1,472,721	36,22
Washington										
68 Seattle SD#1	44.8	84,401	366	7,923	4.22	17,770,221	82	96.1	14,003,28	590,93
Wisconsin										
523 Madison City	61.4	17,676	22	1,020	3.55	6,155,103	100	97.0	5,970,450	211,95

APPENDIX D (concluded)

8 Total Developed Property as % of Total Property Value	9 Local Property Tax (developed property)	10 L_f	11 L_n	12 F_e	13 F Entitle-ment	14 $.95\ F-F_e$	15 $\frac{.95\ F-F_e}{F}$	16 $\frac{L_f/(3b)}{L_n/N_n}$	17 3(b) Payment Ratio	18 Local Contri-bution Rate	19 LCR-L_n/N_n
98.4	$ 9,886,032	$ 315,361	$ 9,570,668	$ 220,593	$ 315,921	$ 79,532	25.2	.603	.397	$279	$ 45
98.6	2,534,663	42,329	2,492,334	39,918	45,023	2,854	6.3	.582	.418	282	-5
91.1	684,349	13,824	670,525	12,997	48,316	32,903	68.1	.511	.489	163	118
98.7	16,273,972	673,742	15,600,230	792,680	803,171	(29,668)	(3.7)	.466	.534	288	56
95.8	5,949,188	401,590	5,547,898	341,828	1,009,164	616,878	61.1	.542	.458	290	183
98.8	14,533,608	1,763,531	12,770,077	1,187,604	2,035,854	746,457	36.7	.599	.401	289	77
94.7	2,677,843	177,005	2,500,838	38,067	143,308	98,076	68.4	.821	.179	282	70
98.4	10,159,921	838,193	9,321,728	783,788	766,817	(55,312)	(7.2)	.534	.466	163	-15
96.3	6,188,201	903,477	5,284,724	496,975	1,090,049	538,572	49.4	.660	.340	163	57
93.8	3,283,348	863,521	2,419,827	825,518	626,726	(230,128)	(36.7)	.511	.489	241	-84
96.0	7,063,093	2,676,912	4,386,181	2,568,960	1,523,028	(1,122,083)	(73.7)	.519	.481	250	-187
87.8	8,352,068	3,182,138	5,169,930	2,060,171	3,187,007	967,486	30.4	.615	.385	247	42
94.5	1,660,345	471,538	1,188,807	286,921	517,463	204,669	39.6	.667	.333	163	37
97.8	7,003,088	1,554,686	5,448,402	1,997,672	2,423,608	304,756	12.6	.464	.536	253	57
83.7	1,515,430	334,910	1,180,520	558,744	919,363	314,651	34.2	.390	.610	200	100
98.3	1,806,683	419,864	1,356,819	364,2[illegible]	448,795	62,128	13.8	.552	.448	179	16
82.4	1,062,999	132,875	930,124	345,2[illegible]	261,032	(97,229)	(37.2)	.282	.718	194	13
90.4	1,003,301	348,145	655,156	236,909	634,964	366,307	57.7	.659	.341	163	81
90.5	1,472,721	36,229	1,436,492	19,794	38,114	16,414	43.1	.667	.333	163	40
96.1	14,003,289	590,939	13,412,350	871,[illegible]	747,271	(161,100)	(21.6)	.426	.574	180	4
97.0	5,970,450	211,951	5,758,499	150,8[illegible]	150,369	(7,983)	(5.3)	.601	.399	283	-63

SOURCES AND METHODS

Column 1

Source: U.S. Bureau of the Census, Census of Governments: 1962, Vol. II, "Taxable Property Values," Washington, D.C., 1963, Table 21, p. 101, *et seq.*; and Table 22, p. 140, *et seq.*

Method:

(1) The value of residential locally assessed real property (V_r) = gross value of locally assessed real property times percent of nonfarm residential property.

(2) The value of total gross developed real property (V_d) = gross assessed value times the sum of percents of nonfarm residential, commercial and industrial, and other and unallocable locally assessed real property.

(3) Net value of locally assessed nonfarm personal property (V_p) = locally assessed personal property value minus amount represented by percentage of acreage and farms in real property value.

(4) Net locally assessed residential personal property (V_{pr}) = the lesser of 10 percent of the value of residential locally assessed real property, or percent of nonfarm residential real property times net value of locally assessed personal property.

(5) State assessed property is V_s.

(6) Residential locally assessed property as a percentage of total developed locally assessed property

$$(\text{Col. 1}) = \frac{V_r + V_{pr}}{V_d + V_p + V_s}$$

Of the states in this sample, Louisiana, Ohio, Washington, and Wisconsin do not have personal property tax, therefore, in calculating Col. 1, the amount represented in these states by V_{pr} and V_p is zero. (Source: Advisory Commission on Intergovernmental Relations, State and Local Taxation of Privately Owned Property Located on Federal Areas, Commission Report A-6, June 1961, Appendix 3.)

Column 2

Source: U.S. Office of Education, School Assistance for Federally Affected Areas, "Financial and Statistical Record" (Form OE-A-147, Revised).

Sources and Methods (continued)

Column 3

Source: Same as for Col. 2.

Column 4

Source: Same as for Col. 2.

Column 5

Method: 3(b) residential percentage = 3(b) ADA (Col. 4) as a percent of total ADA (Col. 2) minus 3(a) ADA (Col. 3) times residential locally assessed property as a percentage of total developed locally assessed property (Col. 1); i.e.,

$$\left(\frac{\text{Col. 4}}{\text{Col. 2} - \text{Col. 3}}\right)\text{Col. 1}$$

Column 6

Source: "Statistics of Local Public School Systems for the Year 1959-60," a questionnaire administered by the U.S. Office of Education.

Method: Ratio of local and intermediate to total revenue times total current expenses.

Column 7

Source: U.S. Office of Education, Bureau of Educational Research and Development, School Finance Section, individual reports for each state entitled "Public School Finance Program."

Column 8

Source: U.S. Bureau of the Census, Census of Governments: 1962, Vol. II, "Taxable Property Values, Washington, D.C., 1963, Table 21, p. 101, *et seq*.

Method: Values of total gross developed real property (V_d) plus state assessed property (V_s) plus net locally assessed personal property (V_p) divided by total gross assessed value.

Column 9

Method: Local property tax from developed property = local revenues current (Col. 6) times percent of local revenue from property tax (Col. 7) times total developed property as a percent of total property (Col. 8).

Sources and Methods (concluded)

Column 10

Method: 3(b) residential percentage (Col. 5) times property tax (developed property) (Col. 9).

Column 11

Method: Property tax (Col. 9) minus L_f (Col. 10).

Column 12

Method: L_n (Col. 11) times N_f (Col. 3 + Col. 4) / N_n (Col. 2 - Col. 3 - Col. 4) minus L_f (Col. 10).

Column 13

Source: U.S. Office of Education, School Assistance for Federally Affected Areas, "Financial and Statistical Record" (Form OE-A-147, Revised).

Column 14

Method: Subtract 5 percent from F, Entitlement (Col. B). This is to allow for the cost of acquiring and administering P.L. 874 funds. From this figure subtract F_e (Col. 12).

Column 15

Method: 95 percent of entitlement minus F_e (Col. 14) divided by F (Col. 13).

Column 16

Method: L_f (Col. 10) per 3(b) ADA (Col. 4) divided by L_n (Col. 11) per N_n.

Column 17

Method: 1 minus Col. 16.

Column 18

Source: U.S. Office of Education, School Assistance for Federally Affected Areas, "Financial and Statistical Record" (Form OE-A-147, Revised).

Column 19

Method: Local Contribution Rate (Col. 18) minus L_n (Col. 11) per N_n.

Appendix E

USE OF ASSESSED VALUE DATA WITHOUT AN EQUALIZATION ADJUSTMENT

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USE OF ASSESSED VALUE DATA WITHOUT AN EQUALIZATION ADJUSTMENT

In the analysis of California school district trends, assessed value data were employed without an adjustment to reflect variations in the ratios of assessed to full value. Such an adjustment has been required by law in California since 1959 to provide comparable treatment of school districts in the computation of state equalization aid. In theory, comparability among school districts would be increased if all data on assessed value or related to assessed value (such as tax rates) were converted to an equalized basis. The relevant question, however, is whether or not such an adjustment would improve the trend analysis undertaken in this study.

To analyze this question, information was obtained on procedures used by the State Board of Equalization to equalize assessed values in California, and basic data relevant to the development of equalized values for the years prior to 1960 were collected. The procedure currently employed involves computing a factor determined by dividing the average statewide ratio of assessed to full value by the ratio applicable to a particular county, and applying this factor to the locally assessed rolls of all school districts in the county. However, since appraisal surveys cannot be conducted every year by the State Board in each county, factors are estimated for the years between surveys. Although adjustments are made to reflect the results of the surveys, the procedure has led to irregular trends in the factors, as indicated in the following tabulation:

		Percent of Full Value	
Fiscal Year (1)	Factor (2)	Estimated (3)	Based on Appraisal Survey (4)
1963-64	1.11	20.8%	-- %
1962-63	1.07	22.3	19.9
1961-62	1.08	21.7	--
1960-61	1.07	21.2	--
1959-60	.96	24.4	20.7
1958-59	.90	25.9	--
1957-58	1.02	23.1	--

The data presented in the tabulation for one of California's counties indicate that substantial shifts in assessed value per ADA would have resulted from application of the factors shown in column 2. However, the appraisal surveys conducted in 1959 and 1963 indicated that the estimated values for those years (column 3) were too high, and adjustments were made in the following year in both cases. This process of estimating ratios of assessed to full value and adjusting on the basis of appraisal surveys conducted every two or three years leads to jogs in equalized assessed value that, in counties of rapid change, could create misleading results if employed to evaluate trends.

This problem could be eliminated by employing the appraisal survey results to develop new series of estimated ratios and factors for the study period. To illustrate this approach, data for another district were analyzed. The estimated factor remained constant at 0.98 during the period 1957-58 to 1961-62; a factor of 1.10 was employed in 1962-63, reflecting the results of an appraisal survey conducted in 1962. The following tabulation shows assessed value per ADA, equalized assessed value per ADA, and assessed value per ADA equalized to reflect a gradual upward shift in the factor between the dates of the appraisal surveys.

Period	V/N	V/N Equalized	V/N Adjusted
1959-60	$26,511	$26,120	$27,562
1960-61	26,954	26,315	28,500
1961-62	24,795	24,401	26,425
1962-63	22,828	24,700	24,700

Use of equalized assessed value reverses the trend in V/N; adjustment to reflect the expected trend in the factors produces a trend similar to that of unequalized V/N.

The development of adjusted ratios of assessed to full value would involve considerable research effort. To provide accurate results the procedure should be applied to all counties, and a new average for the state should be developed for each year weighted according to the value of locally assessed rolls. Factors could then be computed for each county and applied to the locally assessed rolls of the school districts included in the study.

However, data on locally assessed property are not available for school districts prior to fiscal year 1960. Since estimates for these years would have to be made on the basis of data for fiscal years 1960-62 and since the relative importance of state assessed property--largely utilities--can be expected to vary over time, it is likely that an attempt to equalize on the basis of the above procedure would result in considerable inaccuracy.

The applicability of county factors to specific school districts varies according to local assessment practices. In some counties reassessments are made on a countywide basis. However, in many counties it is customary to reassess portions of a county each year, a given area being reassessed every three to five years. Even if the appraisal survey (on the basis of which estimated factors are adjusted) represents average county experience, the application of county factors to a given district may give incorrect results.

As a check on the effect of equalizing assessed values on the trend analysis, computations were made for the 12 unified districts included in the study. This analysis indicated that, although there were some shifts resulting from changes over time in the factors applied to equalized assessed values, general conclusions based on evaluation of trends were not affected. Frequently, as indicated above, shifts changing the direction of trends were reversed when the factors were adjusted to reflect the results of appraisal surveys.

On the basis of this analysis and because of the major research effort required to develop estimates and the variations in reliability of the resulting estimates, it was decided to use unequalized assessed value in the analysis of California school districts. In this connection, data recently developed in the School of Education, Stanford University, tend to support this decision. Unequalized assessed value has been found to be a better predictor of school district performance than equalized assessed value.

Appendix F

PUPILS IN JUNIOR HIGH SCHOOL ON A TUITION BASIS

Appendix F

PUPILS IN JUNIOR HIGH SCHOOL ON A TUITION BASIS

Pupils attending a junior high school on a tuition basis that is maintained by a high school district are credited to the elementary school paying tuition, for the purpose of determining entitlement under P.L. 874 and of computing the state apportionment. Payments to such elementary schools by the federal government include amounts for such pupils, and payments to high schools do not reflect these pupils. However, state apportionments, although computed at the elementary rate for these grade 7 and 8 pupils, are credited to the high school of attendance. Furthermore, published financial data for school districts show ADA for districts of attendance and report actual receipts and expenditures for each school district. Tuition transfer payments are not included in current expense or current income but are reported separately.

To provide a realistic approach to the analysis of ratios computed on a per ADA basis, the ADA's of elementary schools receiving credit for pupils attending junior high schools maintained by other districts were increased to reflect these pupils. Corresponding reductions were made in the ADA's of the high schools involved.

Since P.L. 874 entitlements already reflect this distribution of ADA, no further adjustment was required prior to computation of federal entitlement per ADA. District taxes presumably also reflect the fact that tuition payments are made or received with respect to the ADA in question; the ratios, district taxes per ADA, and total local income per ADA, were computed using the adjusted ADA figures. Since assessed value is the basis for tax income, the ratio, "assessed value per ADA," was also computed on this basis.

As was indicated above, however, both current expense of education and state apportionments reflect a distribution of ADA on an attendance basis. These ratios--current expense per ADA and state apportionment per ADA--were computed using ADA's for districts of attendance. This approach results in some inaccuracies, because current expense per K-6 ADA may not equal the expenditures per K-8 ADA that would have been made if the junior high school pupils had remained in the elementary district.

Development of more precise ratios would require extensive research involving the determination, for each high school providing junior high school facilities for pupils from separate elementary schools, the elementary district of origin, the state apportionment credit, and the tuition transfers. Since the primary purpose of this analysis is to provide a basis for examining overall trends in the critical variables reflecting effort and performance, research of this magnitude was not undertaken.

Appendix G

STUDY OF THE RELATIONSHIPS BETWEEN CHARACTERISTICS OF PROJECT TALENT SCHOOLS AND THE AMOUNT OF IMPACT AID RECEIVED

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STUDY OF THE RELATIONSHIPS BETWEEN CHARACTERISTICS OF PROJECT TALENT SCHOOLS AND THE AMOUNT OF IMPACT AID RECEIVED

Information on school input and output characteristics for a nationally representative sample of high schools has been analyzed to help answer the following three questions:

1. What kinds of schools receive impact aid?
2. What do they do with it?
3. How does it affect their operations and the results they obtain?

Introduction

The school input and output measures or variables used in the analysis that follows came primarily from Project Talent, the first national inventory of human resources. Project Talent tests and questionnaires were given in the Spring of 1960 to about 440,000 students in 1353 secondary schools throughout the country. These high schools were a randomly selected 5% sample of all the public, private, and parochial schools throughout the country. All the students in the 9th, 10th, 11th, and 12th grades in these schools were tested. Where the junior-senior high school system was used, the 9th grade students were tested in the associated junior high schools.

The Project Talent Test Battery is a comprehensive set of aptitude, achievement, and information tests. It required two whole school days to complete the tests. These tests were developed by the staff of Project Talent and were representative of the best types of tests available.

In addition to the information obtained from the students themselves, information was also obtained from the school staff. There were three questionnaires. One filled out by the principal obtained information concerning the faculty (average age, years of teaching experience, degrees held, etc.), and also asked questions about the size of classes, grading system, promotion system, and the like. Another section asked about school curriculum and extracurricular activities; other questions obtained information about the community and background of the school. The other two questionnaires concerned the Guidance Program and the Counselors, seeking to obtain information as to the extent and nature of the program and plans for the future.

Characteristics of the Schools of Project Talent

Based upon the School Characteristics Questionnaires and the average test scores of the Grade 12 students, a comprehensive study was made of the differences which existed between various kinds of schools. The basic objective was to discover if possible the effect of variables such as measures of the home, family, community, and school, upon educational outcomes, such as average scores on the achievement tests and other school outcomes. These school average test scores were therefore used as measures of outcomes and as control variables for each school. Some of these tests were measures of achievement in high school curriculum areas such as English and mathematics; others were measures of basic intellectual skills such as arithmetic reasoning, reading comprehension, and abstract non-verbal reasoning. Also used as a measure of school outcome was a test of information covering a wide range of areas including physical sciences, mechanics, and social studies.

Other measures of outcomes were supplied by the principal of the school. These included such things as absentee rate, dropout rate, and delinquency rate, as well as college attendance rate.

The school was used as the statistical unit. Analysis consisted of examining the patterns of correlations between the outcome variables and the school, community, and home characteristics variables*.

What Types of Schools Receive Impact Aid?

This question was answered by studying the distribution of impact entitlement under Public Law 874 according to the Project Talent Taxonomy of High Schools.

The Classification System

After experimenting with various combinations it was finally decided that the nine regular U.S. Office of Education Regions should be grouped into three groups of Regions. These three groups are: first--Northeast 1 combined with Mideast 2; second--Southeast 5; and third the other six Regions. The schools in each group of Regions are then grouped as rural, small-town, and urban (over 5000 population). The urban schools then are divided into two groups according to the type of neighborhood served (low cost housing, low rental apartments, and low income versus all other responses to item 87 in the School Characteristics Questionnaire).

The suburban schools were examined to see if they should form a separate group. It was found that they were not different from the residential urban (moderate and high cost housing) schools in cities of 5000 to 249,999 population and they were accordingly combined into the same category. The suburban schools were closely similar to urban residential area schools in such respects as per-pupil expenditure and student performance. The per-pupil expenditure for suburban schools vary greatly but average little more than the average for all schools. The distribution is similar to that of the urban schools.. Less than five percent of them are similar to the popular image of the rich Eastern suburban school.

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*For details of the analysis used [illegible] Chapters 6 and 9 of "Studies of the American High School," by J.C. [illegible]agan, J.T. Dailey, M.F. Shaycoft, D.B. Orr, and I. Goldberg. Technical [illegible] to the U.S. Office of Education, Cooperative Research Project No. 226 [illegible]sburgh: Project TALENT Office, University of Pittsburgh, 1962.

Because it has been found that location in a city of 250,000 or more population is more important than Regional location, schools in such cities should be separately studied. Of these, those in cities of 1,500,000 or more population should be a separate group. Each of the two groups of city schools should then be subdivided according to type of neighborhood.

Finally, vocational high schools--regardless of the other factors--form a very homogeneous group and should be studied separately. This, then, gives a total of 17 groups of public schools that are similar enough in situational and location characteristics to justify comparisons among schools in the same group.

Category

10. All vocational schools

Non-vocational high schools: (General comprehensive, academic or college preparatory, university, and superior student schools)

22. Cities A (1,500,000+) - moderate and high cost housing
21. Cities A (1,500,000+) - low cost housing and low income
32. Cities B (250,000-1,499,999) - moderate and high cost housing
31. Cities B (250,000-1,499,999) - low cost housing and low income
44. Regions 1 and 2 - rural
43. Regions 1 and 2 - small-town
42 Regions 1 and 2 - urban (5000-249,999) - moderate and high cost housing
41. Regions 1 and 2 - urban (5000-249,999) - low cost housing and low income
54. Region 5 - rural
53. Region 5 - small-town
52. Region 5 - urban - moderate and high cost housing
51. Region 5 - urban - low cost housing and low income
64. Regions 3, 4, 6, 7, 8, 9 - rural
63. Regions 3, 4, 6, 7, 8, 9 - small-town
62. Regions 3, 4, 6, 7, 8, 9 - urban - moderate and high cost housing
61. Regions 3, 4, 6, 7, 8, 9 - urban - low cost housing and low income

Distribution of Schools Receiving Impact Aid

Table 1 below shows the distribution of schools receiving some entitlement under Public Law 874. The number of schools is shown by size category for each of the 17 Taxonomy Groups. Also shown is the percentage of the schools with entitlement in each Taxonomy Group. It can be seen that the funds tend to go to urban schools with average or better housing and particularly to such schools in the Southeast. A similar pattern was found for schools with 10% or more entitlement.

Table 1

Distribution of Schools Receiving Impact Aid by School Size and Project Talent High School Taxonomy Group

Taxonomy	Size of Senior Class					Percentage
Group	0-24	25-99	100-399	400 up	Total	Receiving Aid
10*	1/1**	2/7	0/25	0/2	3/35	8.6
21		0/1	1/10	0/16	1/27	3.7
22			0/10	1/45	1/55	1.8
31			2/4	0/1	2/5	40.0
32		0/3	2/9	3/9	5/21	23.8
41			2/4		2/4	50.0
42		2/13	6/31	1/3	9/47	19.1
43	0/4	2/23	0/4		2/31	6.5
44	0/2	3/18	0/2		3/22	13.6
51	1/1	4/19	0/4		5/24	20.8
52		7/21	9/21	3/3	19/45	42.2
53	0/5	5/30	2/7		7/42	16.7
54	4/27	13/72	1/2		18/101	17.8
61	0/3	1/4	0/3		1/10	10.0
62		7/27	11/45	4/11	22/83	26.5
63	4/24	16/105	0/9		20/138	14.5
64	5/57	10/71	1/4		16/132	12.1
Total	15/124	72/414	37/194	12/90	136/822	16.5
Percentage Receiving Aid:	12.1	17.4	19.1	13.3	16.5	

*Vocational schools

** The numerator of each fraction is the number of schools in that cell receiving aid. The denominator is the number of Project Talent schools in that cell.

Relationship of Impact Aid to Other Variables

For each of the approximately 800 public senior high schools in Project Talent the amount of funds received by its school district in 1960 as entitlement under Public Law 874 was looked up and converted into proportion of total expenditures. This was then correlated with 49 test and school characteristics variables for all the Project Talent public high schools other than the limited number of specialized vocational high schools.

Table 2 gives a brief description of each of these 50 variables, the source of the information, the mean and standard deviation obtained, and the N upon which these averages are based. In making these calculations it should be remembered that the schools were the established unit.

Table 2-A shows the correlation for these variables with impact aid.

The amount of entitlement had very low correlations with the school characteristics of test means. The largest correlation was -.14 with Salary Level. Salary Level tended to be lowest in the schools receiving the greatest proportion of aid. Such schools also tended to have a shorter school year and have lower Per-Pupil Expenditures. The entitlement variable correlated -.12 with Region (whether school was in southeast Region or not). This means that entitlement tends to go to low expenditure schools because it tends to go to southeastern schools.

It seems indicated that the factors that effect the distribution of impact aid seem to be independent of the school characteristics and school outcome variables studied by Project Talent.

The intercorrelations show some very significant and interesting interrelationships between school outcomes and school characteristics. Such school variables as size, Region, rural-urban, expenditure factors, and socio-economic and ethnic factors are highly intercorrelated and confounded, so that simple comparisons of single school characteristics and school outcomes will nearly always be highly misleading.

Basic Dimensions of School Input and Output Characteristics

When dealing with a complex set of measures and characteristics such as a group of school input and output variables it is most difficult to make interpretations based on cross-tabulations even for very large samples. The number of combinations to compare becomes impossibly large. The pattern of interrelationships can be greatly simplified by computing linear coefficients of correlation. This at least reduces the relationship between one variable and another to a single coefficient. However, for 50 variables, the number of correlation coefficients is 1225. Fortunately, a method is available for reducing such a matrix to its prime components.

Table 2

List of Variables in Impact Aid Table of Correlation

Var. No.	Description	Mean	S.D.	Value	Source*	Remarks
1	LEVEL OF ENTITLEMENT	0.82	2.77	% Impact Aid	--	Ratio of Impact Aid funds to total school district expenditures
2	Grades Served	-	-	Scale Value	SC2	
3	Days in School Year	180.48	5.48	Days in school yr.	SC6	150-159,160-169, ... etc.
4	Length of School Day	5.46	.70	Hrs. in school day	SC7 x SC8	
5	Class Size--Science & Math	24.62	5.98	Pupils	SC9	
6	Class Size--Non-science	24.03	9.96	Pupils	SC10	
7	Special Class (Low IQ)	29.81	45.72	% having classes	SC13(1)	
8	Special Class (Behavior Problems)	2.88	16.75	% having classes	SC13(2)	
9	Special Class (Math Difficulty)	25.41	43.57	% having classes	SC13(7)	
10	Special Class (Reading ")	33.65	47.29	% having classes	SC13(8)	
11	Accelerated Curriculum	45.64	49.84	% having	SC15(7)	Yes=1; No=0
12	Advanced Placement	13.19	33.86	% having	SC16	1,2,6=1; 3,4,5,7=0
13	Summer School	36.34	48.13	% having	SC21	2,3,4=1; 1=0
14	Adult Education	42.19	49.42	% having	SC22	2,3,4,5,6=1; 1=0
15	Additional Counselors Needed	77.34	58.11	% needing	SC31(3)	Yes=1; No=0
16	Additional Teachers Needed	54.54	49.83	% needing	SC31(4)	Yes=1; No=0
17	Books in Library	2478	835	Books	SC32	
18	Library Books per Senior	26.95	12.35	Books per senior	SC32/SC59	
19	Age of Building	24.07	15.23	Years	SC33	
20	% Male Teachers	53.86	17.42	% men	SC46	
21	Degrees per Teacher	12.41	12.52	Coded data	(SC48+49+50)/SC43	
22	MA's & PhD's per Teacher	4.38	4.92	Coded data	(SC49+50)/SC43	
23	Grad. Training per Teacher	6.62	6.65	Coded data	SC53/SC43	
24	Teachers Attending Summer School	4.14	5.35	Coded data	SC54/SC43	
25	Avg. Yrs.--Full Time Staff	10.70	3.71	Years	SC58	
26	Number of Seniors	163.56	200.13	Number	SC59	
27	% Male Seniors	48.54	11.37	% male	SC59	5% class intervals
28	% Negro Students	7.66	20.81	% Negro	SC62	
29	% Dropout--Boys	11.09	9.59	% dropout--boys	SC70	
30	% College Attendance--Male	30.23	21.62	% boys to college	SC72	
31	% Taking New Work in Summers	1.59	5.38	%	SC11	
32	Teacher Starting Salary--Male	[illegible]	[illegible]	$	SC57	
33	Guidance Program	[illegible]	[illegible]	% having	GP1	
34	Housing Quality	[illegible]	2.37	Units	[illegible]	[illegible]

(Continued on next page)

*SC - Project Talent School Characteristics Questionnaire
GP - Project Talent Guidance Program Questionnaire

Table 2 - Continued

Var. No.	Description	Mean	S.D.	Value	Source*	Remarks
35	Office of Education Region	72.45	44.71	% not in Region 5	--	Region 5=0; all others=1
36	Rural-Urban	3.45	2.65	Units	High School taxonomy group	11,12=9;13,14=7;15-16=6; 17,21,25=2;18,22,26=1; 19,20,23,24=5
37	Per-Pupil Expenditure--Sch.System	454.62	162.55	$	SC89	$50 intervals
38	Per-Pupil Expenditure--School	512.68	176.18	$	SC90	$50 intervals
39	Current School Tax Rate	3.55	2.04	$	SC91	$10 intervals
40	Ratio Assessment to Property Value	42.17	20.90	%	SC92	5% intervals
41	Info.Total--Grade 12 Males	142.36	24.19	Sch.Avg.Raw Score	R-190	Units of score
42	Info.Total--Grade 12 Females	126.16	19.44	Sch.Avg.Raw Score	R-190	Units of score
43	Science Info.--Grade 12 Males	9.47	2.34	Sch.Avg.Raw Score	R-107	Units of score
44	Science Info.--Grade 12 Females	6.96	1.74	Sch.Avg.Raw Score	R-107	Units of score
45	English Total--Grade 12	83.07	7.01	Sch.Avg.Raw Score	R-230	Units of score
46	Reading Comprehension--Grade 12	30.82	5.53	Sch.Avg.Raw Score	R-250	Units of score
47	Abstract Reasoning--Grade 12	8.73	1.58	Sch.Avg.Raw Score	R-290	Units of score
48	Math I--Grade 12	8.57	1.76	Sch.Avg.Raw Score	R-311	Units of score
49	Math II+III--Grade 12	16.99	1.44	Sch.Avg.Raw Score	R-334	Units of score
50	% Dropout--Girls	10.03	8.91	%	SC71	

*R = Rights score

Table 2-A

Intercorrelations of Proportion of Impact Aid with 49 School Characteristic Measures Based Upon Project Talent Data*

	Level of Enrollment 1	Grades Served 2	Days in School Year 3	Length of School Day 4	Class Size Sci. & Mat. 5	Class Size Non-Sci. 6	Special Class (Low I.Q.) 7	Same (Behavior Probs.) 8	Same (Math Diff.) 9	Same (Reading Diff.) 10	Accelerated Curriculum 11	Advanced Placement 12	Summer School 13	Adult Education 14	[illegible] Counselors 15	[illegible] Year [illegible] 16	[illegible] 17
1		084	-084	-035	080	015	-003	-009	-014	-069	045	009	087	003	-007	001	-018
2	778		239	-116	327	164	289	116	176	281	253	224	407	-286	-041	002	398
3	766	765		-152	236	143	261	171	238	332	288	171	334	-228	057	022	304
4	773	772	760		-190	-095	-153	-068	-115	-099	-085	-079	-131	037	-020	-100	-061
5	775	774	762	769		463	260	107	118	212	179	169	400	-236	160	080	376
6	774	773	761	768	773		122	053	051	147	058	078	181	-110	121	003	223
7	728	727	716	722	725	724		139	206	349	285	250	317	-173	006	-011	285
8	728	727	716	722	725	724	728		163	173	098	152	184	-076	075	027	111
9	728	727	716	722	725	724	728	728		352	203	134	207	-104	048	-013	181
10	728	727	716	722	725	724	728	728	728		244	176	333	-158	054	-012	228
11	769	768	756	763	765	764	722	722	722	722		298	257	-223	020	-028	289
12	766	765	753	760	763	762	719	719	719	719	758		270	-128	034	-045	198
13	765	764	752	759	761	760	719	719	719	719	758	754		-270	101	-007	415
14	787	778	766	773	775	774	728	728	728	728	769	766	765		-035	040	-244
15	759	758	746	753	755	754	711	711	711	711	749	746	745	759		-109	040
16	759	758	746	753	755	754	711	711	711	711	749	746	745	759	759		-049
17	760	759	747	755	758	758	711	711	711	711	751	749	747	760	740	740	
18	736	735	723	731	734	734	687	687	687	687	727	725	723	736	717	717	736
19	777	776	764	771	773	772	726	726	726	726	767	764	763	777	757	757	758
20	774	773	761	768	770	769	723	723	723	723	764	761	760	774	754	754	755
21	772	771	759	766	768	768	722	722	722	722	763	759	760	772	752	752	755
22	776	775	763	770	772	772	726	726	726	726	767	763	764	776	756	756	758
23	776	775	763	771	772	771	725	725	725	725	766	763	763	776	756	756	757
24	772	771	760	766	768	767	722	722	722	722	762	760	760	772	753	753	753
25	773	772	762	767	769	768	723	723	723	723	763	760	759	773	753	753	754
26	773	772	760	767	769	768	724	724	724	724	763	761	759	773	753	753	755
27	761	760	748	755	757	756	712	712	712	712	752	749	747	761	742	742	743
28	706	705	695	701	703	702	664	664	664	664	698	697	694	706	688	688	690
29	774	773	761	768	770	769	723	723	723	723	764	761	760	774	754	754	755
30	778	777	765	772	774	773	727	727	727	727	768	765	764	778	758	758	759
31	774	773	761	768	770	769	724	724	724	724	764	761	760	774	755	755	755
32	776	775	763	770	772	771	725	725	725	725	766	763	762	776	756	756	757
33	776	775	763	770	772	771	725	725	725	725	766	763	762	776	756	756	757
34	779	778	766	773	775	774	728	728	728	728	769	766	765	779	759	759	760
35	784	775	763	770	772	771	725	725	725	725	766	763	762	784	756	756	757
36	787	778	766	773	775	774	728	728	728	728	769	766	765	787	759	759	760
37	741	740	728	735	737	736	694	694	694	694	732	729	728	741	721	721	724
38	686	685	675	680	683	682	643	643	643	643	678	676	674	686	669	669	669
39	760	759	748	754	756	755	711	711	711	711	751	747	747	760	740	740	741
40	758	757	745	752	755	754	710	710	710	710	749	747	745	758	739	739	740
41	765	756	745	751	753	752	706	706	706	706	747	744	745	765	737	737	738
42	768	759	748	754	756	755	709	709	709	709	750	747	746	768	740	740	741
43	765	756	745	751	753	752	706	706	706	706	747	744	745	765	737	737	738
44	768	759	748	754	756	755	709	709	709	709	750	747	746	768	740	740	741
45	768	759	747	754	756	755	709	709	709	709	750	748	746	768	740	740	742
46	769	760	748	755	757	756	710	710	710	710	751	749	747	769	741	741	743
47	763	754	742	749	751	750	704	704	704	704	745	742	741	763	736	736	736
48	763	754	742	749	751	750	704	704	704	704	745	742	741	763	736	736	736
49	769	760	748	755	757	756	710	710	710	710	751	749	747	769	741	741	743
5C	778	777	765	772	774	773	727	727	727	727	768	765	764	778	758	758	759

(See Notes on page 11)

Table 2-A - Continued

Intercorrelations of Proportion of Impact Aid with School Characteristic Measures Based Upon Project Talent Data

	Books Per Senior 18	Age of Building 19	% Male Teachers 20	Degrees Per Teacher 21	M.A. + & PhD's Per Teacher 22	Grad. Train'g Per Teacher 23	Prop. Summer School 24	Avg. Yrs. Full-Time Staff 25	Number of Senior 26	% Male Seniors 27	% Negro Students 28	% Boys Dropout 29	% College Attend.-Male 30	% Taking New Work Summer 31	Tchrs. Start. Sal. Males 32	Guidance Program 33	Housing Qual. (% low [illegible]) 34
1	007	-127	-082	-001	019	-019	-018	-054	-003	032	042	025	004	077	-119	057	020
2	275	-066	-051	163	349	162	014	235	427	050	-030	138	217	335	037	347	142
3	266	073	-033	103	270	136	024	220	466	059	066	204	206	371	243	226	-014
4	-122	055	083	-080	-124	-089	-057	-122	-211	-037	-159	-152	019	-100	640	-015	057
5	374	-126	-251	102	245	081	-058	275	476	106	212	249	049	308	-044	146	-059
6	219	-068	-125	042	117	060	-052	104	212	048	105	142	-002	119	-043	079	-020
7	216	018	-060	165	308	161	076	173	392	050	-018	192	130	264	049	245	032
8	119	042	-003	040	150	037	019	096	282	-074	031	104	035	140	087	048	-050
9	155	078	014	096	190	073	023	064	304	001	-024	140	137	256	027	157	054
10	173	126	-015	123	283	118	040	168	446	004	-019	222	170	278	139	184	025
11	206	-026	-064	149	256	155	048	192	334	063	028	095	224	245	042	276	060
12	126	-042	-029	111	214	164	101	182	411	-021	028	027	280	189	027	180	146
13	310	026	-227	161	400	137	010	296	532	038	-012	242	261	523	039	256	125
14	-214	018	034	-068	-177	-097	002	-159	-337	-050	-121	-109	-098	-249	-101	-209	-060
15	082	046	-090	-010	014	-035	-076	078	095	026	106	110	-041	052	-018	-147	-065
16	-038	014	-049	023	023	030	043	040	073	065	048	045	-041	-054	005	018	-070
17	794	-019	-110	124	299	166	-057	272	338	017	-082	122	259	288	047	345	192
18		-084	-188	104	207	148	-017	217	226	048	351	242	045	230	-048	210	-071
19	735		070	005	024	-018	010	125	070	-029	-204	042	002	028	178	-046	-014
20	731	772		-014	-054	016	053	-248	-113	-188	-151	-130	017	-120	095	011	035
21	731	770	767		807	823	689	153	166	016	021	096	067	125	036	088	029
22	734	774	771	772		601	381	319	438	033	003	177	220	309	113	211	096
23	733	774	771	770	774		800	166	139	032	036	059	101	097	-009	124	043
24	729	770	767	766	770	770		029	076	002	031	046	055	058	-017	-009	-023
25	730	771	769	766	770	770	766		356	048	069	129	126	204	022	087	018
26	731	771	768	766	770	770	767	767		034	022	281	333	437	176	257	090
27	723	759	756	754	758	758	755	755	761		097	001	-051	-031	018	047	053
28	667	704	702	699	703	703	700	701	702	691		153	-182	-007	-147	-053	-322
29	732	772	769	767	771	771	767	768	768	757	701		-076	197	029	-019	-195
30	735	776	773	771	775	775	771	772	772	760	705	773		254	108	125	288
31	731	772	769	767	771	771	768	768	768	756	702	769	773		071	156	066
32	733	774	771	769	773	773	769	770	770	758	703	771	775	771		101	020
33	733	774	771	769	773	773	769	770	770	758	703	771	775	771	773		135
34	736	777	774	772	776	776	772	773	773	761	706	774	778	774	776	776	
35	733	774	771	769	773	773	769	770	770	758	703	771	775	771	774	773	776
36	736	777	774	772	776	776	772	773	773	761	706	774	778	774	776	776	779
37	700	740	737	736	739	738	735	735	737	726	673	736	740	736	738	738	741
38	647	685	682	682	684	683	680	682	682	671	638	681	685	681	683	683	686
39	718	758	756	754	758	757	753	754	754	742	691	756	759	755	757	757	760
40	717	756	754	752	756	755	752	752	753	741	689	753	757	753	755	755	758
41	721	755	752	751	755	755	752	751	752	744	685	755	756	753	754	754	757
42	724	758	755	753	757	757	753	754	754	746	687	756	759	755	757	757	760
43	721	755	752	751	755	755	752	751	752	744	685	755	756	753	754	754	757
44	724	758	755	753	757	757	753	754	754	746	687	756	759	755	757	757	760
45	730	758	755	753	757	757	753	754	754	746	688	756	759	755	757	757	760
46	731	759	756	754	758	758	754	755	755	747	689	757	760	756	758	758	761
47	736	754	750	748	752	752	748	749	749	741	683	751	754	750	752	752	755
48	736	754	750	748	752	752	748	749	749	741	683	751	754	750	752	752	755
49	731	759	756	754	758	758	754	755	755	747	689	757	760	756	758	758	761
50	736	776	773	771	775	775	771	772	772	761	705	774	777	773	775	775	778

(See Notes on page 11)

Table 2-A - Continued

Intercorrelations of Proportion of Impact Aid with 49 School Characteristics Measures Based Upon Project Talent Data

	Office of Ed. Region	Rural-Urban	Per-Pupil Exp. Sch. System	Per-Pupil Exp. School	Current School Tax Rate	Ratio Assessment to Prop.	Info. Total Gr 12 Males	Info. Total Gr 12 Females	Sci. Info. Gr 12 Males	Sci. Info. Gr 12 Females	English Total Gr 12	Reading Comprehension Gr 12	Abstract Reasoning Gr 12	Math I Gr 12	Math II and III	% [illegible] Drop.
	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1	-120	035	-105	-080	-034	-084	-036	-031	-058	-048	001	-016	-045	-029	019	037
2	205	527	156	170	-099	215	300	097	283	041	205	264	217	097	224	165
3	265	554	346	314	-107	386	229	106	261	149	117	195	190	084	110	166
4	085	-203	075	065	056	-133	043	128	024	104	062	035	101	101	011	-162
5	-165	479	-162	-162	-142	201	-006	-197	027	-185	-033	-021	-059	-115	050	281
6	-097	266	-020	-110	-055	057	019	-096	027	-096	006	000	-028	-063	035	121
7	133	385	157	186	-052	226	179	073	178	053	113	148	144	036	131	200
8	067	238	106	094	-083	180	055	023	079	021	015	038	065	-017	022	091
9	109	302	149	113	-096	173	082	024	094	019	047	069	079	-016	046	152
10	204	422	236	244	-065	274	198	090	185	047	111	151	175	050	103	216
11	069	361	161	173	-048	159	184	098	183	067	135	167	155	095	150	102
12	074	304	158	156	-031	178	171	097	175	063	120	151	152	112	137	071
13	-038	584	069	072	-145	271	250	060	237	020	203	238	204	081	235	255
14	-107	-334	-169	-170	027	-197	-138	-014	-157	003	-067	-088	-092	-010	-087	-115
15	-145	071	-113	-124	-087	070	-084	-106	-066	-089	-082	-094	-075	-108	-074	103
16	001	-004	005	000	-015	084	006	002	019	011	-015	015	008	006	008	037
17	025	459	125	142	-065	205	340	197	321	128	327	324	296	203	305	132
18	-194	393	-040	-027	-133	151	-167	-296	-143	-262	-183	-212	-200	-357	-167	261
19	203	049	140	125	072	175	132	171	108	118	133	154	193	147	084	066
20	385	-173	237	258	127	010	153	173	154	151	047	108	168	178	-003	-185
21	078	212	083	069	-033	068	060	025	052	009	053	067	060	007	044	075
22	179	483	195	179	-098	236	242	117	229	068	179	230	205	108	191	183
23	106	195	152	142	-013	079	059	033	060	028	049	066	061	010	044	042
24	065	033	093	082	001	005	-053	-028	-032	011	-061	-036	-053	-036	-050	026
25	-073	370	-037	-042	-137	167	096	-003	079	-043	117	107	099	029	157	155
26	202	730	261	233	-169	488	292	093	314	055	186	271	252	122	219	298
27	-039	074	-003	-027	013	007	-042	-071	-045	-032	081	010	-005	-074	113	152
28	-299	128	-168	-186	-133	-023	-664	-680	-551	-473	-691	-699	-654	-663	-578	202
29	-084	282	-016	-048	-148	171	-107	-198	-085	-183	-121	-100	-110	-189	-073	789
30	[illegible]	319	238	205	011	115	445	373	434	323	378	435	400	363	359	-094
31	076	457	134	085	-123	150	170	053	155	024	112	172	135	040	140	183
32	365	167	353	308	-021	246	225	221	218	202	149	193	248	184	111	031
33	213	320	228	243	-012	168	275	191	260	140	216	273	262	181	182	020
34	160	102	098	094	052	027	440	433	380	298	423	415	394	412	371	-213
35		203	616	586	118	314	477	484	440	407	309	436	482	416	212	-071
36	784		240	206	-135	436	300	064	312	042	168	251	225	076	193	294
37	738	741		949	124	277	380	377	374	345	257	368	411	309	172	-006
38	683	686	679		121	278	382	387	378	349	267	372	407	319	189	-026
39	757	760	730	675		-227	118	157	108	163	101	106	134	151	085	-136
40	755	758	729	676	745		255	180	282	174	149	227	229	138	143	174
41	762	765	719	664	739	736		831	931	665	856	917	851	854	781	-128
42	765	768	722	667	742	739	757		751	860	819	867	804	878	717	-220
43	762	765	719	664	739	736	765	757		686	751	823	763	774	697	-112
44	765	768	722	667	742	739	757	768	757		632	694	637	729	552	-205
45	765	768	722	668	742	739	753	757	753	757		916	846	856	914	-108
46	766	769	723	669	743	740	754	757	754	757	768		889	886	840	-105
47	760	763	717	664	737	735	748	751	748	751	756	757		851	745	-127
48	760	763	717	664	737	735	748	751	748	751	756	757	763		777	-213
49	766	769	723	669	743	740	754	757	754	757	768	769	757	757		-061
50	775	778	740	685	759	757	757	760	757	760	760	761	755	755	761	

(See Notes on page 11)

Notes for Table 2-A

*Dailey, John T., Human Resources and Manpower Planning Conference on "Operational and Personnel Research in the Mangement and Manpower Systems," Brussels, August, 1965.

Figures in upper right are correlations to three decimals, with the decimal point omitted.

Figures in lower left are the N's upon which the corresponding correlations in the upper right quadrant are based.

The means and standard deviations for each of these variables, and a brief description of each, are given in Table 2.

Multiple factor analysis* can isolate and identify a limited number of hypothetical variables underlying a group of observed variables. In the case of the 50-variable school matrix it was found that the common variance represented by the matrix could be reduced to five common factors.** Each variable can be described in terms of its five factor loadings (correlations between test or variable and factor). The five prime dimensions isolated were:

1. Student Achievement
2. Rural-Urban Status
3. Expenditure Level
4. Teacher Training
5. Unfavorable Community Environment

It is rare to find a set of factors that coincide so closely with specific matrix variables as do these. Actually, the five factors correlate so highly with key variables that we may conclude that virtually all of the systematic relationships among the 50 variables may be paralleled by the correlations of each variable with:

1. Reading Comprehension (Var. 46)
2. Rural-Urban (Var. 36)
3. Per-Pupil Expenditure System (Var. 37)
4. Degrees Per Teacher (Var. 21)
5. % Boys Dropout (Var. 29)

Table 3 shows the factor loadings for the five factors that emerged.

Table 4 shows the factor loadings in order of magnitude for the variables with loadings of ±.10 or greater on the first factor. This first factor is a general academic achievement factor, with extremely high loadings for Reading Comprehension, English Achievement, Arithmetic Reasoning, and Information Total. It represents the ability of the students to acquire, retain, and manipulate symbolic material. The generalized nature of the factor is most significant, indicating that achievement of students is highly related to their nonverbal abstract reasoning ability, and that they tend to do equally well in verbal and quantitative tests. The test score means of the students are highly related to the proportion of Negro students and are moderately related to housing quality, college attendance, and Region. There is very little relationship to rural-urban status.

Of the school characteristics, the highest loadings are for teacher starting salary, size of library, and per-pupil expenditure.

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* DuBois, Philip, an Introduction to Psychological Statistics, Harper & Row, New York, 1965, and **Harmon**, Harry H., Modern Factor Analysis, Chicago, Illinois. The University of Chicago Press, 1960.

**Dailey, John T. Human Resources and Manpower Planning Conference on "Operational and Personnel Research in the Management and Manpower Systems," Brussels, August, 1965.

Table 3

Factor Loadings for the First Five Factors*for Impact Aid Variable and 49 School Characteristics Variables

Var. No.	Student Achievement Factor I	Rural-Urban Factor II	Expenditures Factor III	Teacher Training Factor IV	Unfavorable Community Environment Factor V
1	-.00	.04	-.23	.00	-.12
2	.16	.61	-.07	.08	-.06
3	.06	.60	.25	.00	.20
4	.09	-.20	.15	-.09	-.22
5	-.08	.56	-.42	-.02	.16
6	-.03	.32	-.28	-.04	.06
7	.07	.50	.03	.12	.12
8	-.01	.26	.09	-.00	.19
9	-.00	.38	.12	.02	.16
10	.06	.50	.18	.04	.28
11	.08	.50	.00	.10	-.10
12	.10	.42	-.01	.12	-.11
13	.17	.65	-.24	.07	.16
14	.00	-.48	-.05	.01	.07
15	-.08	.07	-.17	-.09	.25
16	.02	-.04	-.01	.06	.20
17	.23	.66	-.20	.01	-.18
18	-.32	.62	-.23	.00	-.13
19	.17	-.07	.24	-.02	.40
20	.07	-.15	.54	.02	-.14
21	.02	.14	-.02	.93	.06
22	.15	.45	-.02	.69	.14
23	.01	.16	.04	.91	-.03
24	-.07	-.04	.09	.86	.03
25	.09	.36	-.28	.14	.20
26	.15	.74	.02	.07	.30
27	.00	.06	-.15	.02	.06
28	-.76	.19	-.10	.02	-.03
29	-.16	.26	-.12	.03	.68
30	.41	.34	.02	.07	-.19
31	.08	.56	-.07	.05	.11
32	.33	.48	.63	.01	.10
33	.16	.48	.10	.03	-.27
34	.48	.10	-.06	.03	-.31
35	.34	.17	.73	.06	.04
36	.11	.82	-.02	.09	.19
37	.22	.31	.76	.07	-.03
38	.23	.30	.76	.06	-.06
39	.14	-.17	.18	.00	-.20
40	.14	.44	.27	-.02	.36
41	.91	.24	.16	.00	-.02
42	.90	-.00	.25	.01	-.06
43	.83	.26	.18	.00	-.01
44	.74	-.03	.27	.01	-.05
45	.94	.10	-.02	.01	-.01
46	.94	.18	.11	.03	.01
47	.88	.17	.21	.01	.01
48	.93	-.02	.15	-.00	-.04
49	.88	.13	-.13	.01	.03
50	-.18	.28	-.13	.01	.67

Note on Table 3

*Program written by Dr. Arthur D. Kirch. For details of the Varimax Rotation see Harmon, Harry H., "Modern Factor Analysis." U. of Chicago Press, Chicago, Illinois. 1960.

Table 4

Factor 1 -- Student Achievement

Var. No.	Description	Factor Loading
46	Reading Comprehension Grade 12	.94
45	English Total Grade 12	.94
48	Math I Grade 12	.93
41	Information Total Grade 12 Males	.91
42	Information Total Grade 12 Females	.90
49	Math II and III Grade 12	.88
47	Abstract Reasoning Grade 12	.88
43	Science Information Grade 12 Males	.83
28	% Negro Students	-.76
44	Science Information Grade 12 Females	.74
34	Housing Quality	.48
30	% College Attendance Male	.41
35	Office of Education Region	.34
32	Teacher Starting Salary Male	.33
18	Library Books per Senior	-.32
17	Books in Library	.23
38	Per-Pupil Expenditure School	.23
37	Per-Pupil Expenditure School System	.22
50	% Girls Dropout	-.18
19	Age of Building	.17
13	Summer School	.17
29	% Dropout Boys	-.16
33	Guidance Program	.16
2	Grades Served	.16
26	Number of Seniors	.15
22	MA's & PhD's per Teacher	.14
39	Current School Tax Rate	.14
40	Ratio Assessment to Property Value	.14
36	Rural-Urban	.11
12	Advanced Placement	.10
1	LEVEL OF ENTITLEMENT	.00

Note: 30 variables have loadings more than ±.10

Class size has almost no loading on this factor. School size has a very low positive loading, as does having a guidance program. Age of the school building has a similarly low positive loading, meaning that students in older buildings do slightly better.

The second factor is shown in Table 5. This factor has its highest loading for rural-urban status. It also has a high loading for the measure of school size. This indicates that there is little difference between rural and urban schools of the same size. It also indicates that, when one compares schools of different sizes, one is really mostly comparing rural and urban schools. This can be most misleading if one is, for example, comparing the college attendance rates of large and small schools.

Large loadings are also found for having a summer school, number of books per senior, grade structure, and length of school year. Many other variables have loadings of .30 to .59. Only four of the 41 non-test variables have loadings of less than .10. Nearly all school characteristics are appreciably different for rural and urban schools. This means that comparisons of schools are meaningless unless rural-urban status or size is held constant.

The third factor is shown in Table 6. Its highest loadings are for per-pupil expenditure, Region, teacher starting salary, percentage male teachers, and class size. Level of entitlement has a loading of -.23, indicating it is negatively related to expenditure level.

The fourth factor is shown in Table 7. It has very high loadings for the measures of amount of academic training of teachers, but has almost no loading for level of teacher experience. Only four variables have loadings of as much as .15.

The fifth and last factor is shown in Table 8. This has its highest loadings for the two dropout indices. It also has appreciable loadings for the age of building, assessment ratio, quality of housing, and size of senior class. This appears to be a factor related to unfavorable school environment.

It is a most interesting finding that such measures as Region, School Size and Percent Negro do not define prime dimensions. Apparently, once one knows a school's Reading Comprehension average, Rural-Urban Status, System Per-Pupil Expenditure, Degrees per Teacher, and Boys Dropout Rate it is fully described and one may ignore its size, region, racial composition, and at least 41 other input and output measures.

Factor Profiles

"Boiling down" the dimensionality of the 50 school "input" and "output" variables to five basic factors or dimensions makes it possible to describe

Table 5

Factor 2 -- Rural-Urban

Var. No.	Description	Factor Loading
36	Rural-Urban	.82
26	Number of Seniors	.74
17	Books in Library	.66
13	Summer School	.65
18	Books per Senior	.62
02	Grades Served	.61
03	Days in School Year	.61
31	% Taking New Work Summers	.56
05	Class Size, Science & Math.	.56
07	Special Class (Low I.Q.)	.50
10	Special Class (Reading Diff.)	.50
11	Accelerated Curriculum	.50
32	Teachers Starting Salary -- Male	.48
14	Adult Education	-.48
33	Guidance Program	.48
22	MA's & PhD's per Teacher	.45
40	Ratio Assessment to Prop. Values	.44
12	Advanced Placement	.42
09	Special Class (Math. Diff.)	.38
25	Average Years Full-Time Staff	.36
30	% College Attendance Male	.34
06	Class Size, Non-Sci.	.32
37	Per-Pupil Expenditure School System	.31
38	Per-Pupil Expenditure School	.30
50	% Girls Dropout	.28
08	Special Class (Behavior Problems)	.26
29	%Boys Dropout	.26
43	Science Information 12th Grade Boys	.26
41	Information Total 12th Grade Boys	.24
04	Length of Sch. Day	-.20
28	% Negro Students	.19
46	Reading Comprehension Grade 12	.18
35	Office of Education Region	.17
47	Abstract Reasoning Grade 12	.17
39	Current School Tax Rate	-.17
23	Graduate Training per Teacher	.16
20	% Male Teachers	-.15
21	Degrees per Teacher	.14
49	Math I & II Grade 12	.13
34	Housing Quality (% Low Quality)	.10
45	English Total Gr. 12	.10
01	LEVEL OF ENTITLEMENT	.04

Note: 41 variables with loadings more than ±.10.

Table 6

Factor 3 -- Expenditures

Var. No.	Description	Factor Loading
37	Per-Pupil Expenditure School System	.76
38	Per-Pupil Expenditure School	.76
35	Office of Education Region	.73
32	Teachers Starting Salary -- Males	.63
20	% Male Teachers	.54
05	Class Size, Science & Math	-.42
25	Average Years Full-Time Staff	-.28
06	Class Size Non-Science	-.28
40	Ratio Assessment to Prop. Values	.27
44	Science Information 12th Grade Girls	.27
03	Days in School Year	.25
42	Information Total 12th Grade Girls	.25
13	Summer School	-.24
19	Age of Building	.24
01	LEVEL OF ENTITLEMENT	-.23
18	Books per Senior	-.23
47	Abstract Reasoning Grade 12	.21
17	Books in Library	-.20
10	Special Class (Reading Diff.)	.18
39	Current School Tax Rate	.18
43	Science Information 12th Grade Boys	.18
15	Additional Counselors	-.17
41	Information Total 12th Grade Boys	.16
04	Length of School Day	.15
27	% Male Seniors	-.15
48	Math I Grade 12	.14
49	Math II & III	-.13
50	% Girls Dropout	-.13
09	Special Class (Math Diff.)	.12
29	% Boys Dropout	-.12
46	Reading Comprehension Grade 12	.11
28	% Negro Students	-.10
33	Guidance Program	.10
45	English Total Grade 12	-.02

Note: 33 variables have loadings more than ±.10.

Table 7

Factor 4 -- Teacher Training

Var. No.	Description	Factor Loading
21	Degrees per Teacher	.93
23	Graduate Training per Teacher	.91
24	Prop. Summer School	.86
22	MA's & PhD's per Teacher	.69
25	Average Years Full-Time Staff	.14
12	Advanced Placement	.12
7	Special Class (Low I.Q.)	.12
11	Accelerated Curriculum	.10
1	LEVEL OF ENTITLEMENT	.00
41	Information Total 12th Grade Boys	.00
46	Reading Comprehension Grade 12	.03

Note: 8 variables with loadings more than ±.10.

Table 8

Factor 5 -- Unfavorable Community Environment

Var. No.	Description	Factor Loading
29	% Boys Dropout	.68
50	% Girls Dropout	.67
19	Age of Building	.40
40	Ratio Assessment to Property Value	.36
34	Housing Quality (% Low Quality)	-.31
26	Number of Seniors	.30
10	Special Class (Reading Difficulty)	.28
33	Guidance Program	-.27
15	Additional Counselors	.25
4	Length of School Day	-.22
3	Days in School Year	.20
39	Current School Tax Rate	-.20
25	Average Years Full-Time Staff	.20
16	Additional Teachers	.20
36	Rural-Urban	.19
30	% COllege Attendance -- Male	-.19
17	Books in the Library	-.18
13	Summer School	.16
9	Special Class (Math Difficulty)	.16
5	Class Size Science & Math	.16
20	% Male Teachers	-.14
22	MA's & PhD's per Teacher	.14
18	Books per Senior	-.13
7	Special Class (Low I.Q.)	.12
31	% Taking New Work Summers	.11
12	Advanced Placement	-.11
32	Teachers Starting Salary Male	.10
1	LEVEL OF ENTITLEMENT	-.12
41	Information Total 12th Grade Boys	-.02
46	Reading Comprehension Grade 12	.01

Note: 28 variables with loadings more than ±.10.

each variable with a simple profile of loadings on the five factors. Figure 1 shows the factor profile for Level of Entitlement, School System Per-Pupil Expenditure, and Region. The expenditure variable has high loadings on the expenditure factor, and some loading on the achievement factor and the rural-urban factor. It has almost no loading on the other two factors. Level of entitlement is negatively related to expenditure and has a very slight relationship with unfavorable school environment. The impact aid tends to go to low-expenditure schools in unfavorable environments. It has no relationship to student achievement, rural-urban status, or teacher academic training.

Cross-Tabulation Analysis of Impact Aid and School Characteristics

In order to explore a wide range of possible relationships between level of entitlement and school characteristics, cross-tabulations were made involving entitlement and 158 other measures. The tabulations were made in a way to hold constant such variables as school size, rural-urban status, and Region.

Many sizable relationships were found between amount of impact aid and other school measures on simple comparisons, but few of these hold up when size, rural-urban status, and Region are held constant. The schools with 4 percent of entitlement or more, as compared with those with no entitlement tended to:

1. be smaller.
2. have lower salaries.
3. have less experienced teachers.
4. have fewer male teachers.
5. spend less money.
6. have larger classes.
7. have smaller libraries.
8. have lower tax rates.
9. have lower assessment ratios.
10. have a smaller percentage of local school support.
11. have more half-day sessions.
12. have more students appear before juvenile court.

On the other hand, they tended to:

1. have newer buildings.
2. serve newer homes.
3. have a greater percentage going to college.

This would be a very puzzling set of relationships if it hadn't earlier been shown that impact aid tended to go to schools in the Southeast. The above relationships merely reflect the overlap between many school variables and school size and Region.

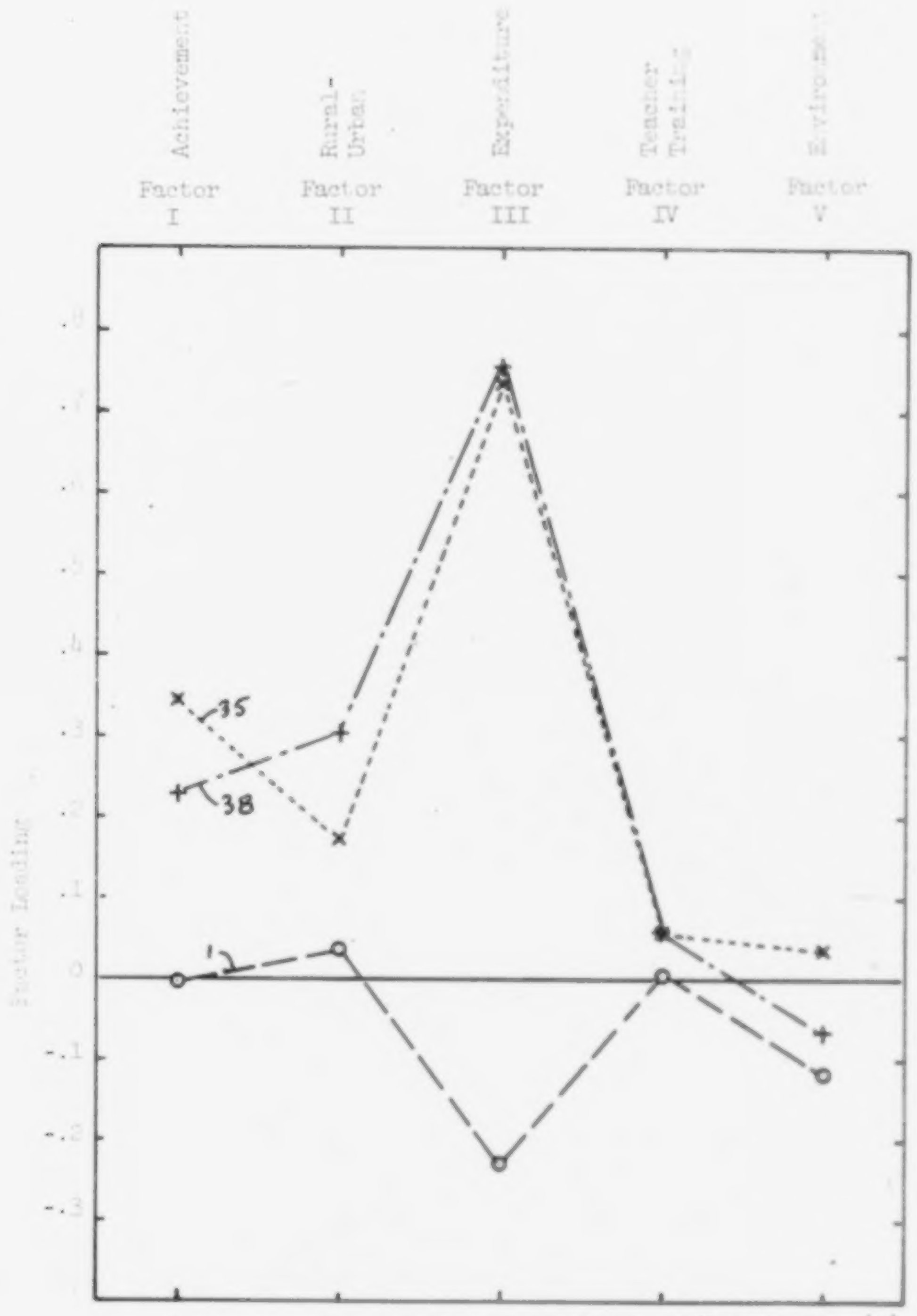

Figure 1. Factor loadings for Level of Entitlement (1), Region (35), and Per-Pupil Expenditure (38)

When size of senior class and Region are held constant, few relationships with level of entitlement hold up. Since they are so similar, it makes little difference if rural-urban status is also held constant in these analyses.

Table 9 - shows means and standard deviations by level of entitlement (none,0-3.99, 4%+) for 16 different school characteristics for groups of schools that are all the same in size and Region.

It may be concluded that any real unique relationship between amount of entitlement and any aspects of schools and their students must be extremely weak if they exist at all. This should not be surprising because we are examining the effects of very small variations in expenditures where expenditure has only a weak relationship with school outcomes.

Even small amounts of additional funds going to schools might possibly cause detectable changes in school operations if the schools tended to concentrate their use on only a few of the many ways they spend their money. That such effects do not appear in this study is probably the result of the schools' using the impact funds in the same way they use their other funds.

Conclusions

1. It was found that impact funds tend to go to urban schools in the southeastern states. The money tends to go to schools spending the least.

2. There seemed to be no visible consistent pattern in how the schools used the impact funds.

3. The impact funds appeared to have no detectable effect on the performance of students and on school output.

4. Funds going to schools with no strings attached are likely to be used in the same way as the schools' regular funds, and, if so, will have a minimum effect on school output.

5. If moderate amounts of Federal funds are to have an optimal effect on school output, they must be for special programs, as is being done in the Education Act of 1965.

Table 9

Means and Standard Deviations of Various School Characteristics by Region, Level of Entitlement, and School Size

Impact	Southeast Region						All Other Regions					
	Small Schools			Large Schools			Small Schools			Large Schools		
Aid	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N
						Class Size - Science and Math (Students)						
None	25.6	5.9	140	26.9	3.0	19	21.0	5.3	299	28.7	3.9	177
Low	25.4	5.2	20	28.0	2.4	6	23.0	4.9	30	26.7	4.2	26
High	28.8	3.2	11	29.5	2.9	12	20.6	4.7	11	28.5	3.3	13
						Books in Library						
None	2025	821	140	2835	65	21	1854	876	290	2722	408	176
Low	1855	843	19	2850	0*	6	1981	903	29	2608	478	26
High	2277	682	11	2523	633	12	1268	820	11	2850	0*	12
						Age of Plant						
None	20.2	13.6	141	21.5	14.0	21	27.0	14.8	298	26.4	15.7	178
Low	17.2	13.2	20	20.3	14.0	6	21.5	17.2	30	19.7	15.3	26
High	8.4	5.3	11	17.8	13.2	12	22.9	6.7	11	25.5	15.4	13
						Starting Salary - Male Teachers						
None	2974	426	138	3298	434	21	4020	434	300	4484	426	177
Low	3250	354	20	3250	288	6	3834	518	30	4231	324	26
High	3159	288	11	3166	534	12	3750	426	11	4058	573	13
						Average Years Experience, Full-Time Staff						
None	11.3	3.1	138	13.3	2.9	21	9.6	3.7	299	13.2	3.0	177
Low	10.0	3.1	20	14.5	1.5	6	9.7	3.7	30	11.4	3.7	25
High	8.9	3.2	11	12.5	3.0	12	7.8	4.4	11	12.3	3.2	13
						Number of Students in 12th Grade						
None	45.2	24.1	141	203.7	113.9	21	42.5	25.3	300	466.3	373.0	178
Low	47.0	26.7	20	200.0	76.4	6	45.3	22.7	30	319.2	216.2	26
High	59.7	22.5	11	241.7	111.5	12	27.9	19.3	11	350.0	184.0	13
						% To Juvenile Court						
None	0.7	0.9	141	1.2	0.7	21	1.1	1.3	300	1.4	1.1	176
Low	0.6	0.9	20	1.0	0.0	6	1.5	1.4	30	2.0	1.5	26
High	0.8	0.6	11	1.7	0.7	12	1.3	1.7	11	2.5	1.6	13
						%Boys Dropout						
None	12.8	9.8	141	11.7	7.8	21	8.9	6.8	299	14.9	13.0	175
Low	13.5	9.6	20	20.0	12.6	6	9.0	7.6	30	14.2	12.4	26
High	12.3	9.6	11	12.5	4.3	12	7.7	4.4	11	14.2	10.0	13

Table 9 - Continued

	Southeast Region						All Other Regions					
	Small Schools			Large Schools			Small Schools			Large Schools		
Impact Aid	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N
Per-Pupil Expenditure in School System (dollars) (SC-89)												
None	212	90	134	234	43	21	437	153	287	474	120	173
Low	211	68	18	342	37	6	384	158	28	402	139	24
High	208	58	9	248	54	11	425	174	11	361	83	11
Current School Tax Rate ($/100) (SC-91)												
None	5.26	3.43	137	6.48	3.62	21	7.59	3.58	291	10.60	4.38	176
Low	6.10	3.21	19	5.67	1.49	6	6.38	3.83	29	8.54	3.90	26
High	5.56	2.95	9	6.42	4.54	12	6.46	2.90	11	7.00	3.70	12
Ratio of Assessment to Property Value (SC-92)												
None	2.54	1.77	134	2.76	1.66	21	3.34	2.20	295	2.55	2.06	176
Low	2.26	.91	19	2.00	.58	6	2.80	1.54	30	3.65	2.00	26
High	2.56	1.26	9	2.18	1.53	11	3.20	1.60	10	2.38	1.21	13
Percentage of Negroes in Grades 9-12 (SC-98)												
None	21.12	46.24	129	8.33	32.83	18	4.39	15.65	278	8.72	18.51	156
Low	41.27	52.24	17	15.00	40.41	6	8.46	21.25	26	5.80	17.87	25
High	43.89	54.66	9	14.17	40.71	12	1.11	3.14	9	7.69	5.76	13
Degrees per Teacher (SC48 + SC49 + SC50 ÷ SC43)												
None	1.03	.24	139	1.29	.33	21	1.04	2.47	294	1.54	.40	176
Low	0.98	.39	20	1.38	.32	6	1.04	1.62	30	1.46	.37	26
High	1.12	.49	11	1.43	.39	12	1.03	2.70	11	1.62	.34	13
Percentage Having Guidance Program (GP-1)												
None	56.8	49.5	139	81.0	39.3	21	73.3	44.2	300	99.4	7.5	178
Low	42.1	49.4	19	100.0	0.0	6	70.0	45.8	30	100.0	0.0	26
High	90.9	28.8	11	91.7	27.6	12	63.6	48.1	11	100.0	0.0	13

ATTACHMENT

Tests Used in This Study

All of the tests used in Project Talent are described in full in Design for a Study of American Youth, the first report of Project Talent.* This report contains not only a description of each test, but also the rationale under which it was developed. For convenience a brief description of the tests used in the present analysis of Impact Aid is attached. These particular variables were also used in the previously mentioned study of the American High School, and have been selected because of their importance in it.

Information Test

The total score is based upon 252 items covering a very wide variety of areas, including the following:

- Vocabulary
- Literature
- Music
- Social Studies
- Mathematics
- Physical Sciences
- Aeronautics and Space
- Electricity and Electronics
- Mechanics
- Home Economics
- Sports
- Biological Sciences

Physical Sciences Information Test

This is a subscale of the Information Test. The items of this test sample concepts based on representative curriculum from various school systems and cover topics taught in elementary school and high school in chemistry, physics, astronomy, and other areas.

English Test

The purpose of this test is to measure the ability to express oneself adequately in English. There are five separate subscores: spelling, capitalization, punctuation, English usage, and effective expression. The sum of the five subscores indicates over-all achievement in those aspects of English expression which can be measured by objective test items.

Reading Comprehension

The purpose of this test is to measure the ability to comprehend written materials. What is measured is the ability to read with comprehension, rather than to merely mouth the words without really understanding the facts, ideas, or concepts that the writer is attempting to convey. The test includes passages on a wide range of topics. The student reads the passage and then answers a number of questions about it, referring to the article as often as he likes. Few of the items are answerable without reading the passage. The ability measured in this test is sometimes called "academic intelligence" and is a good predictor of school success in an academic or liberal arts curriculum.

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* "Design for a Study of American Youth, by J. C. Flanagan, J. T. Dailey, M. F. Shaycoft , W. A. Gorham, D. B. Orr, and I. Goldberg, in The Talents of American Youth, Vol. 1. Boston: Houghton Mifflin Co., 1962.

Abstract Reasoning

This test measures ability in a type of reasoning for which formal instruction is not generally given in school at any level. It is not intended to imply that here the schools fail to provide instruction in reasoning. They do provide such instruction in mathematics and science courses, for instance. But this test provides a measure of reasoning ability on a task that is not curriculum-linked, and therein lies its particular utility as a control variable. Each item consists of a pattern of diagrams with one missing portion to be selected from among several options. The solution depends upon the ability to determine the logical relationships of the diagrams.

Mathematics Tests

These three tests cover various phases of mathematics as taught in elementary and secondary schools.

Math I: This is an arithmetic reasoning test and is intended to measure the ability to do the kind of reasoning required to solve mathematics problems as taught in elementary schools. Actual computation, except at a very simple level, is not included in this test.

Math II: The purpose of this subtest is to measure achievement in all kinds of math generally taught up to and including the 9th grade, with the exception of areas covered in Math I. The primary emphasis of this test is on elementary algebra; other topics include fractions, decimals, percentage, square roots, intuitive geometry, and elementary measurement formulas. While the topics covered are taught in Grade 9 or earlier in most schools, curricula differ considerably in regard to grade placement of various topics.

Math III: This subtest covers topics normally taught in Grades 10-12 in college-preparatory courses. As in the case of Mathematics-Part II, the items are intended primarily to test understanding and application of basic concepts and methods, not rote memory. A wide range of subjects includes: plane geometry, solid geometry, algebra, trigonometry, elements of analytic geometry, and introductory calculus. It should be noted that some of these subjects are not offered in most high schools.

For this analysis, the scores on Math II and III were combined.

Appendix H

TABLES USED IN THE STUDY OF P.L. 815

Table H-1

State Per Pupil Costs for the years 1953 - 1964

States and Territories	1953	1954	1956	1957	1958	1959	1960	1961	1962	1963	1964
Alabama	$ 900	$ 900	$ 900	$ 900	$1,020	$1,070	$1,060	$ 970	$1,020	$1,010	$ 890
Alaska	2,500	2,500	2,570	2,650	2,300	2,630	2,630	2,110	2,110	2,110	2,110
Arizona	1,000	1,000	1,000	1,050	960	990	1,150	1,090	1,150	870	1,050
Arkansas	900	900	900	930	970	930	930	1,040	1,060	-----	1,040
California	1,260	1,260	1,370	1,420	1,340	1,360	1,460	1,550	1,510	1,530	1,600
Colorado	1,100	1,100	1,200	1,230	1,120	1,240	1,200	1,200	1,260	1,320	1,250
Connecticut	1,360	1,360	1,520	1,540	1,540	1,300	1,320	1,600	1,570	1,490	1,570
Delaware	1,240	1,300	1,460	1,550		-----	-----	-----	-----	-----	-----
Florida	900	900	890	910	990	990	950	1,060	1,010	1,020	1,040
Georgia	900	900	900	900	900	960	980	1,090	1,120	1,060	1,100
Guam	-----	-----	900	940	880						
Hawaii	1,000	1,000	900	1,000	1,150	1,030	1,290	1,480	1,240	1,360	1,270
Idaho	1,000	1,000	940	1,000	950	1,040	980	1,250	1,070	1,070	1,080
Illinois	1,300	1,300	1,300	1,320	1,280	1,160	1,190	1,260	1,350	1,230	1,310
Indiana	1,160	1,160	1,350	1,350	1,220	1,180	1,280	1,370	1,560	1,500	1,440
Iowa	1,060	1,060	1,130	1,150		1,090	1,120	1,180	1,230	1,260	1,270
Kansas	1,060	1,060	1,060	1,130	1,130	1,190	1,120	1,200	1,240	1,100	1,160
Kentucky	1,000	1,000	980	1,000	1,090	1,010	1,070	1,100	1,110	1,180	1,040
Louisiana	900	900	940	980	1,080	1,070	1,070	1,020	1,020	980	-----
Maine	1,060	1,060	1,080	1,130	1,080	1,150	1,100	1,140	1,130	1,130	1,120
Maryland	1,380	1,380	1,380	1,470	1,380	1,380	1,330	1,490	1,540	1,570	1,590
Massachusetts	1,360	1,360	1,630	1,720	1,640	1,630	1,610	1,640	1,670	1,820	1,900
Michigan	1,200	1,200	1,310	1,370	1,260	1,260	1,250	1,580	1,570	1,540	1,570
Minnesota	1,260	1,360	1,510	1,550	1,430	1,320	1,400	1,540	1,420	1,440	1,480
Mississippi	900	900	850	910	940	940	820	920	1,000	990	920
Missouri	1,060	1,060	1,080	1,090	1,190	1,110	1,100	1,330	1,260	1,240	1,240
Montana	1,060	1,060	1,090	1,140	1,220	1,210	1,200	1,340	1,300	1,300	1,300
Nebraska	1,060	1,060	1,090	1,150	1,150	1,220	1,110	1,260	1,300	1,380	1,210
Nevada	1,120	1,120	1,190	1,240	1,060	1,040	1,120	1,170	1,210	1,200	1,300
New Hampshire	1,060	1,060	1,080	1,140	1,000	1,090	1,150	1,230	1,210	1,280	1,300

Table H-1 (concluded)

State Per Pupil Costs for
the years 1953 - 1964

States and Territories	1953	1954	1956	1957	1958	1959	1960	1961	1962	1963	1964
New Jersey	$1,400	$1,400	$1,420	$1,500	$1,500	$1,520	$1,570	$1,720	$1,860	$1,760	$1,750
New Mexico	1,000	1,000	990	1,020	970	1,020	1,030	1,260	1,060	980	1,050
New York	1,600	1,600	1,800	1,890	1,810	1,750	1,800	2,000	1,910	1,820	2,060
North Carolina	900	900	920	990	930	930	890	1,010	1,040	1,070	1,130
North Dakota	1,100	1,100	1,130	1,210	1,340	1,230	1,240	1,310	1,240	1,260	1,270
Ohio	1,300	1,300	1,360	1,360	1,240	1,250	1,300	1,340	1,340	1,240	1,260
Oklahoma	1,000	1,000	1,000	1,020	1,160	1,030	1,090	1,250	1,230	1,260	1,180
Oregon	1,000	1,000	1,130	1,170	1,160	1,230	1,100	1,150	1,220	1,200	1,200
Pennsylvania	1,300	1,300	1,580	1,640	1,630	1,610	1,630	1,700	1,800	1,810	1,950
Rhode Island	1,200	1,200	1,440	1,470	1,440	1,210	1,470	1,460	1,240	1,240	1,400
South Carolina	900	900	890	880	880	810	910	1,060	1,000	1,060	980
South Dakota	1,100	1,100	1,200	1,250	1,300	1,150	1,290	1,420	1,340	1,340	1,270
Tennessee	1,020	1,020	930	960	820	950	830	900	1,030	1,090	1,000
Texas	1,000	1,000	1,000	1,000	1,030	1,050	1,150	1,090	1,140	1,150	1,140
Utah	1,100	1,100	1,180	1,230	1,110	1,160	1,240	1,370	1,360	1,320	1,360
Vermont	1,060	1,060	-----	-----	-----	-----	-----	-----	-----	-----	-----
Virginia	1,200	1,200	1,200	1,230	1,100	1,110	1,040	1,160	1,190	1,200	1,250
Washington	1,160	1,160	1,250	1,290	1,320	1,350	1,400	1,470	1,490	1,560	1,530
West Virginia	1,060	1,060	820	820	890	1,030	1,040	1,240	1,140	1,140	-----
Wisconsin	1,200	1,200	1,420	1,470	1,290	1,290	1,330	1,340	1,300	1,280	1,390
Wyoming	1,100	1,100	1,010	1,050	1,230	1,230	1,260	1,230	1,250	1,250	1,300
Puerto Rico	700	700	-----	-----	-----	-----	-----	-----	-----	-----	-----
Virgin Island	900	900	-----	-----	-----	-----	-----	1,130	-----	-----	-----
Guam	-----	-----	500	940	880	890	890	-----	-----	-----	-----

Table H-2

NUMBER OF P.L. 815 - SECTION 5 - PAYMENTS DURING 1951, 1952, 1963 AND 1964 PER CLASS OF MAGNITUDE

	1951	1952	1963	1964
0-499	0	0	0	0
500-999	0	0	0	0
1,000-1,499	0	0	0	0
1,500-1,999	0	0	0	0
2,000-2,499	1	0	0	0
2,500-2,999	1	0	0	0
3,000-3,499	0	0	0	0
3,500-3,999	0	0	1	0
4,000-4,999	1	1	0	2
5,000-5,499	1	0	0	0
5,500-5,999	1	0	0	0
6,000-6,999	1	0	1	0
7,000-7,999	5	0	1	0
8,000-8,999	5	2	1	1
9,000-9,999	2	0	1	1
10,000-10,999	5	2	1	1
11,000-11,999	2	0	3	0
12,000-12,999	3	2	1	0
13,000-13,999	2	1	0	0
14,000-14,999	1	2	1	1
15,000-15,999	1	1	2	0
16,000-16,999	1	2	1	0
17,000-17,999	4	1	1	0
18,000-18,999	3	1	0	0
19,000-19,999	3	2	3	0
20,000-20,999	3	6	1	2
21,000-21,999	1	2	2	1
22,000-22,999	2	2	0	0
23,000-23,999	5	1	1	1
24,000-24,999	1	3	3	0
25,000-25,999	3	3	1	0
26,000-26,999	4	6	3	0
27,000-27,999	9	6	0	1
28,000-28,999	4	2	3	0
29,000-29,999	2	2	2	1
30,000-30,999	1	6	2	1
31,000-31,999	0	2	1	1
32,000-32,999	4	3	0	0
33,000-33,999	5	0	0	2
34,000-34,999	1	0	2	1
35,000-35,999	0	5	1	0
36,000-36,999	3	7	1	1
37,000-37,999	1	2	1	0
38,000-38,999	1	2	1	1
39,000-39,999	1	2	1	1
40,000-40,999	0	4	2	1
41,000-41,999	2	1	2	0
42,000-42,999	1	3	1	0
43,000-43,999	2	3	1	0
44,000-44,999	3	3	1	2

Table H-2 (continued)

	1951	1952	1963	1964		1951	1952	1963	1964
45,000-45,999	1	4	0	0	70,000-70,999	1	2	1	0
46,000-46,999	1	0	3	0	71,000-71,999	1	2	0	0
47,000-47,999	1	7	0	0	72,000-72,999	1	2	0	0
48,000-48,999	0	2	2	0	73,000-73,999	0	2	2	0
49,000-49,999	0	3	1	0	74,000-74,999	0	3	1	0
50,000-50,999	1	7	1	0	75,000-75,999	1	4	1	1
51,000-51,999	1	3	2	0	76,000-76,999	2	1	1	0
52,000-52,999	0	1	2	0	77,000-77,999	0	1	1	0
53,000-53,999	2	3	1	1	78,000-78,999	2	5	1	0
54,000-54,999	0	0	0	0	79,000-79,999	0	1	0	0
55,000-55,999	0	4	0	1	80,000-80,999	0	3	0	1
56,000-56,999	0	1	0	0	81,000-81,999	1	2	1	0
57,000-57,999	1	2	3	1	82,000-82,999	2	3	1	0
58,000-58,999	3	2	1	0	83,000-83,999	0	0	0	0
59,000-59,999	0	2	1	0	84,000-84,999	0	2	2	0
60,000-60,999	1	6	0	0	85,000-85,999	1	3	0	0
61,000-61,999	0	2	0	0	86,000-86,999	0	2	0	1
62,000-62,999	0	2	0	0	87,000-87,999	0	1	0	0
63,000-63,999	1	1	0	0	88,000-88,999	0	0	1	0
64,000-64,999	0	1	3	1	89,000-89,999	0	2	0	0
65,000-65,999	2	2	0	0	90,000-90,999	1	6	1	0
66,000-66,999	0	5	0	0	91,000-91,999	0	2	0	0
67,000-67,999	1	6	0	0	92,000-92,999	1	1	2	0
68,000-68,999	0	1	0	0	93,000-93,999	0	2	1	0
69,000-69,999	0	3	0	1	94,000-94,999	2	4	2	0

Table H-2 (concluded)

	1951	1952	1963	1964
95,000-95,999	1	0	2	0
96,000-96,999	1	0	1	0
97,000-97,999	0	1	0	0
98,000-98,999	1	0	1	1
99,000-99,999	0	3	0	0
100,000-149,999	23	73	17	7
150,000-199,999	13	57	17	5
200,000-249,999	13	95	15	7
300,000-349,999	3	35	7	0
350,000-399,999	0	16	1	3
400,000-449,999	1	21	0	1
450,000-499,999	1	16	3	0
500,000-549,999	1	14	3	1
550,000-599,999	0	14	3	1
600,000-649,999	1	13	1	0
650,000-659,999	0	7	1	1
700,000-749,999	0	6	0	1
750,000-799,999	0	7	1	0
800,000-849,999	1	4	0	0
850,000-899,999	0	6	0	0
900,000-949,999	0	5	0	0
950,000-999,999	0	5	0	1
1,000,000-1,499,999	1	24	2	1
1,500,000-1,999,999	0	12	1	0
2,000,000-2,999,999	0	12	0	0
TOTAL	195	665	148	61

Table H-3

NONABSORBED SECTION 5 PAYMENTS REIMBURSED TO THE FEDERAL GOVERNMENT

State	Total Nonabsorbed Section 5 Payments	No. of School Districts
	Year: 1952	
Arizona	$438,874	1
	Year: 1953	
Alabama	16,268	2
Arizona	8,619	2
California	376,617	8
Colorado	25,000	1
Florida	86,934	1
Idaho	7,262	2
Iowa	1,930	1
Kansas	23,822	2
Michigan	24,308	3
Mississippi	3,692	1
Missouri	8,236	1
Nevada	5,877	1
New Jersey	7,854	1
New Mexico	94,905	2
Ohio	136,740	1
Oregon	4,506	1
South Dakota	71,600	1
Tennessee	71,861	4
Texas	57,173	6
Vermont	13,103	1
Virginia	11,174	1
Washington	120,652	4
	Year: 1954	
Alabama	$ 31,136	5
Arizona	28,681	3
Arkansas	13,323	2
California	234,155	5
Idaho	34,000	1
Iowa	3,634	2
Kansas	14,894	1
Kentucky	8,543	1
Louisiana	18,951	2
Michigan	6,086	2
Mississippi	7,087	3
Missouri	18,026	1
New Jersey	14,582	1
North Carolina	1,826	1
Ohio	96,207	3
South Dakota	10,265	1
Tennessee	22,394	1
Washington	7,925	1
	Year: 1955	
California	186,978	7
Florida	2,414	1
Georgia	303,020	1
Kansas	28,265	1
Kentucky	12,452	1
Louisiana	18,260	2
Michigan	19,848	3
Missouri	28,241	1
Montana	98,810	1
Nevada	11,370	1
New Jersey	62,157	2
New York	21,977	2
North Carolina	1,928	1
Ohio	29,495	2
Oklahoma	5,658	1
Oregon	8,329	1
Rhode Island	42,516	1
Tennessee	6,505	1
Texas	16,699	3
Virginia	17,403	1
Washington	26,921	2
	Year: 1956	
Alabama	$ 23,683	3
Arizona	160,907	3
California	89,366	4
Colorado	388,204	1
Connecticut	2,018	1
Iowa	110,344	2
Kansas	7,070	1
Maryland	538,777	1
Michigan	806,687	4
Missouri	8,441	1
Montana	98,983	1
Nevada	4,000	1
New Jersey	35,163	2
New York	13,600	1
Ohio	12,599	3
Pennsylvania	17,589	1
South Carolina	2,498	1
Tennessee	7,258	2
Virginia	10,757	1
Washington	10,600	2
	Year: 1957	
Louisiana	$ 6,562	2
Montana	275	1
Texas	2,887	1
Hawaii	23,033	1

Table H-4

SECTION 8 AND 9 - PAYMENTS

Year	State	Appl. #	Amount
1951	none		
1952	Kentucky	11	495,400
"	S. Carolina	203	296,016
"	"	208	235,860
1953	none		
1954	Kentucky	11	835,602
"	Ohio	15	848,112
"	S. Carolina	208	11,028
1955	New Mexico	1	525,450
"	Ohio	15	298,528
"	Rhode Is.	501	129,800
"	Texas	2	495,000
1956	Alabama	1	101,800
"	Arkansas	2	494,361
"	"	401	107,000
"	"	501	13,300
"	California	56	147,735
"	"	57	64,862
"	"	202	107,060
"	"	232	68,510
"	"	419	119,700
"	Colorado	402	53,900
"	Connecticut	205	127,161
"	Georgia	11	71,633
"	"	13	30,926
"	"	14	37,856
"	Idaho	204	197,540
"	Maryland	4	518,070
"	Michigan	203	265,680
"	"	419	2,700
"	Missouri	503	133,560
"	"	506	33,920
"	"	510	35,510
"	Montana	407	15,370
"	"	506	20,000
"	Nevada	2	54,920
"	New York	403	309,600
"	Ohio	403	337,273
"	"	405	246,900
"	Oklahoma	1	445,899
"	"	414	13,500
"	Pennsylvania	401	279,100
1956	Rhode Is.	402	9,000
"	S. Carolina	204	229,378
"	"	205	92,397
"	"	206	258,740
"	S. Dakota	501	77,000
"	Texas	2	495,000
"	"	401	29,500
"	Wisconsin	203	18,000
"	"	402	13,800
1961	Arizona	708	520,955
"	California	19	1,954,485
"	Georgia	24	670,501
"	Idaho	204	65,165
"	Kentucky	11	256,300
"	"	12	171,500
"	Missouri	503	133,560
"	"	506	33,920
"	"	510	35,510
"	"	601	78,246
"	"	602	85,611
"	"	603	4,320
"	Montana	410	513,168
"	Nevada	603	3,312,477
"	Ohio	403	1,252,204
"	"	405	247,630
"	Oregon	401	239,692
"	"	701	176,600
"	S. Carolina	207	584,815
1962	Colorado	1001	151,230
"	Montana	410	337,000
1963	North Dakota	1103	10,240
"	"	1104	2,000
"	Wyoming	903	238,200
1964	Nebraska	1202	50,000

SYMBOLS USED IN THE STUDY OF P.L. 874

F = total net entitlement, P.L. 874

F_e = net entitlement for intradistrict equalization

L = local revenues (including intermediate source)

S = state payments to district

N = average daily attendance = ADA

C = current expenses of education

E = foundation program for state aid in dollars per ADA (E^V represents variable unit program)

D = basic aid in dollars, equal to a fixed number of dollars per ADA times ADA

t_s = tax rate stipulated by the state for participating in state equalization aid

t_d
t_i = district tax rate

k = proportioning factor used to allocate state aid funds

V = total taxable assessed value

v = average assessed value per family

R = ratio of residential to residential plus commercial property values

Subscripts

f = federally connected

$3(a)$ = pupils under Section 3(a) of P.L. 874

$3(b)$ = pupils under Section 3(b) of P.L. 874

n = nonfederal

d, i = district

r = residential

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